Final Environmental Impact Statement for the ON Line Project

Volume 1

U.S. Department of the Interior
Bureau of Land Management
Ely District Office
Nevada

BLM

Ely District Office / Nevada

BLM Mission Statement

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

FES 10-59

Cover Photo: View north along US-93 near the intersection with Kane Springs Valley Road

BLM/NV/EL/11-04+1793

United States Department of the Interior

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In Reply Refer To:
N-82076
2850 (NVL0000)

Dear Reader:

Enclosed for your review is the Final Environmental Impact Statement (FEIS) for the ON Line Project, a proposed 236-mile long 500 kV electric transmission line, a new substation near Ely, Nevada, a loop-in of an existing transmission line to the proposed substation, expansion of an existing substation, and a fiber-optic line dedicated to operation of the transmission line. The electric transmission line would extend south from a new substation northwest of Ely through White Pine, Nye, Lincoln, and Clark Counties to the existing Harry Allen Substation near Las Vegas. The expansion of the existing Falcon Substation would occur in Eureka County. The proponent is NV Energy. The Bureau of Land Management, Ely District Office is the lead agency for the EIS with cooperation from the Southern Nevada BLM District, White Pine County, Lincoln County, and the N-4 Grazing Board.

In October 2009, a Draft Supplemental EIS was distributed for public comment because the ON Line Project was a sub-set of the original Ely Energy Center (EEC) Project, which had also included a 1,500 megawatt coal-fired power plant. A Draft EIS for the EEC Project, that included the transmission line, was made available in December 2008, prior to the February 2009 announcement by NV Energy that the construction of the coal-fired power plant was indefinitely postponed. In April 2009, the BLM received an amended application from NV Energy for the transmission line, substation, and fiber-optic line only. The project was renamed the ON Line Project and the DSEIS was prepared and made available to the public, as stated above. All comments on the ON Line Project DSEIS were fully considered and evaluated for the preparation of this FEIS.

The availability period ends 30 days following the publication of the Notice of Availability (NOA) of this FEIS in the Federal Register. The publication date of the NOA is the exclusive means for calculating the availability period for this analysis. Following the close of the availability period, BLM will issue a Record of Decision (ROD) available to the public. The ROD will contain the appropriate instructions for appeal.

The FEIS is a completed document. If you have information for agency consideration in making our decisions, it can be sent to the following addresses and must be received by the end of the availability period.

ON Line Project FEIS
Bureau of Land Management or michael_dwyer@blm.gov
702 N. Industrial Way
HC 33 Box 33500
Ely, NV 89301

For further information on this project, questions can be directed to Mike Dwyer at (775) 293-0523.

Sincerely,

Rosemary Thomas

Rosemary Thomas
District Manager
Ely District Office

Final Environmental Impact Statement for the ON Line Project

() Draft **(X) Final**

Lead Agency:	U.S. Department of the Interior Bureau of Land Management Ely District Office
Cooperating Agencies:	White Pine and Lincoln Counties, Nevada, and the N-4 Grazing Board
Counties Directly Affected:	Clark, Eureka, Lincoln, Nye, and White Pine, Nevada
Date FEIS Filed with EPA:	Same as date of publication in the Federal Register
Questions on the FEIS can be Directed to:	Mike Dwyer, EIS Project Manager (775) 293-0523 One Nevada Transmission Line (ON Line) EIS Bureau of Land Management 702 N. Industrial Way HC 33 Box 33500 Ely, NV 89301 Phone (775) 289-1800 michael_dwyer@blm.gov
Questions must be received by:	30 days after publication in the Federal Register

ABSTRACT

In compliance with the National Environmental Policy Act, this Final Environmental Impact Statement (EIS) evaluates the environmental effects of the construction, operation, and maintenance of the ON Line Project proposed by NV Energy in Clark, Eureka, Lincoln, Nye, and White Pine Counties, Nevada, on lands currently managed by the Ely and Southern Nevada District Offices of the Bureau of Land Management (BLM). The Proposed Action and Action Alternative include construction of a 500 kV electric transmission line from the proposed Robinson Summit Substation extending 236 miles south to the Harry Allen Substation near Las Vegas, expansion of the existing Falcon Substation in Eureka County, associated appurtenances and infrastructure, and use of best management practices and mitigation measures to avoid environmental impacts or minimize the magnitude, extent, and duration of impacts. Associated federal actions include BLM's issuance of rights-of-way for construction and operation of the project. The agency preferred alternative includes all of the same components as the Proposed Action with the exception of the RSS-Site B sub-alternative replacing the Robinson Summit Substation component.

Authorized Officer Responsible for the Environmental Impact Statement:

Rosemary Thomas

Rosemary Thomas, Manager
Ely District Office

Executive Summary

ON Line Project

Final EIS

EXECUTIVE SUMMARY

The following sections summarize the Final Environmental Impact Statement (FEIS) for the One Nevada Transmission Line Project (ON Line Project). This information is provided as a convenient synopsis for the public, but is not a substitute for review of the complete FEIS. This summary provides a general overview of the proposed ON Line Project and its purpose and need; briefly describes the Proposed Action and other alternatives; and summarizes major impacts for key resources associated with the Proposed Action and the Action Alternative.

This FEIS was prepared in response to an amended SF 299 *Application for Transportation and Utility Systems and Facilities on Federal Lands* for the ON Line Project, submitted by NV Energy. The facilities of the ON Line Project were previously proposed as components of the Ely Energy Center Project (EEC) as originally proposed by NV Energy in 2006. On February 9, 2009, NV Energy announced its decision to postpone the permitting and development of the EEC coal-fired power plant and associated supporting facilities until such time that carbon capture/sequestration are commercially feasible, but to continue with the permitting and development of the substation, transmission, and communication components between its southern and northern service territories, and upgrade of existing substations, now referred to as the ON Line Project. The purpose of the FEIS is for the U.S. Bureau of Land Management (BLM) to evaluate and disclose potential impacts of the proposed development of the ON Line Project, and determine whether to grant rights-of-way (ROWs).

The BLM is the lead federal agency for this FEIS. Originally, the EEC environmental review team included the BLM as the lead federal agency with the U.S. Environmental Protection Agency (EPA), National Park Service (NPS), and White Pine County as cooperating agencies. Once the BLM decided to proceed with a FEIS due to the change in the Proposed Action from the EEC to the ON Line Project, the EPA and NPS decided to withdraw their cooperating agency status for the reduced project scope, and only White Pine County remained as a cooperating agency. Following the issuance and review of the DSEIS, Lincoln County and the N-4 Grazing Board requested to be cooperating agencies for the FEIS. Thus, there are a total of three cooperating agencies for this FEIS.

The Notice of Intent (NOI) for the ON Line Project SEIS was published in the Federal Register on July 29, 2009, initiating a 30-day scoping period. The issues evaluated in this FEIS are generally derived from public comments originally made during the EEC Project scoping period and summarized in the EEC EIS Scoping Summary issued in April 2007 (BLM-JBR 2007). Further, although no additional public scoping meetings were held for the ON Line Project, any public comments received during the 30-day scoping period, initiated by the NOI, were also fully reviewed and considered.

Proposed Action

NV Energy proposes to construct and operate a 236-mile transmission line with telecommunication and appurtenant facilities in White Pine, Nye, Lincoln, and Clark counties, a substation near Robinson Summit in White Pine County, a loop-in of the existing Falcon-Gonder 345 kV transmission line at the new Robinson Summit Substation, expansion of the existing Falcon Substation in Eureka County, addition of new equipment inside the existing Harry Allen Substation in Clark County, and access roads to all facilities collectively referred to as the ON Line Project. The Proposed Action components, including the new substation at Robinson Summit and transmission line and telecommunication facilities, were described and analyzed in the EEC Draft Environmental Impact Statement (i.e., Robinson Summit to Harry Allen (RS-HA Line #1) as transmission line segments 6C, 8, 9B, 9A, 9D, and 11.

To summarize, the components of the transmission facilities would include:

- Robinson Summit 500/345 kV Substation, approximately 108 acres in size, adjacent to the Southwest Intertie Project (SWIP) Utility Corridor in White Pine County
- One Nevada 500 kV Transmission Line and telecommunication appurtenances, approximately 236 miles in length, between the proposed Robinson Summit Substation and the existing Harry Allen Substation in Clark County mostly within the SWIP Utility Corridor
- Falcon-Gonder 345 kV transmission line loop-ins at the Robinson Summit 500/345 kV Substation
- Permanent access roads into the Robinson Summit Substation and within the project area within desert tortoise habitat, and temporary access roads into all facilities along the 236-mile project route
- Expansion of the existing Falcon Substation on private property in Eureka County to add 345 kV series compensation equipment
- Addition of 500 kV electrical connection equipment within the existing footprint of the Harry Allen Substation in Clark County

Action Alternative

The Action Alternative would consist of all of the same facilities as described under the Proposed Action; however, the 500 kV transmission line and telecommunication facilities would follow a parallel route alignment approximately 1,800 feet to the east of the Proposed Action alignment within the SWIP Utility Corridor. The RSS-Site B sub-alternative, including existing access road improvements and a new access road to the alternative substation, and Falcon-Gonder 345 kV loop-ins, would be an alternate action and location for the proposed substation. The transmission line segments of the Action Alternative include 6C, 8, 9B, 9C, 9D and 11. Alternative segments of the Action Alternative include Segment 9A (sub-alternative) instead of 9C as well as Segment 10 (sub-alternative) instead of 9B, 9A, and 9D. Sub-alternative segment 9A deviates from the SWIP Utility Corridor and sub-alternative Segment 10 deviates from the SWIP Utility Corridor as well but for the southern portion follows and occurs within an adjacent federally-designated utility corridor. The linear distance of the Action Alternative would be shorter than the Proposed Action by about 2 miles, for a total length of 234 miles. The facilities and alignment described under the Action Alternative were also described and analyzed in the

EEC Project Draft Environmental Impact Statement (i.e., RS-HA Line #2), with the exception of the RSS-Site B sub-alternative.

Agency Preferred Alternative

The Agency Preferred Alternative would consist of all of the same facilities as the Proposed Action, including the Proposed Action transmission line route location, however the RSS-Site B sub-alternative, including the access road and Falcon-Gonder loop-ins, would replace the Robinson Summit Substation component.

BLM Actions

BLM actions for this project would include issuance of ROWs necessary for construction (short-term) and operation (long-term) of the ON Line Project. ROWs issued for 50 years, with options to renew, would be necessary for the operation and maintenance of all ON Line Project facilities located on BLM-administered public land. In addition, short-term ROWs would be required from the BLM to accommodate construction activities such as temporary access roads, batch plant sites, structure site work areas, pulling and tensioning sites, wire splicing sites, and material/equipment staging.

ENVIRONMENTAL IMPACTS

Proposed Action and Alternatives

In **Chapter 4** of this FEIS, the environmental effects of the various components of the Proposed Action are evaluated and compared to the Action and No Action Alternatives, as detailed in **Chapter 2**. The primary environmental impacts for the components of the Proposed Action and Alternatives, including No Action, are outlined in **Table 2.6-1**. The environmental impacts of these alternatives and components are summarized in the following narrative.

Water Resources

<u>Construction</u>

Although not anticipated, the most likely impacts to surface water from the ON Line Project would be from surface disturbance during construction.

Best Management Practices (BMPs) would be implemented at all locations to avoid and/or minimize surface water quality impacts during the construction phase. Short-term, minor effects may include the degradation of seasonal surface runoff through vegetation removal or soil compaction.

Under the Proposed Action, wetlands within the project area would not be directly or indirectly impacted. Wetland areas would be spanned by project facilities, and no structures would be placed within these wetlands.

No direct impacts to surface waters and wetlands are anticipated since all such waters can be spanned with no construction disturbance to the surface waters, and BMPs would be implemented and uniformly followed. There would be no impacts to groundwater.

<u>Operations</u>

No impacts to surface water resources as a result of operations of the ON Line Project are anticipated. There would be no impacts to groundwater.

Geology and Minerals

The ON Line Project could locally alter surface topography. Authorized mining claims, oil and gas leases, and geothermal leases occur near the vicinity of project elements. The anticipated level of impacts to geology and minerals would be negligible.

Paleontological Resources

Paleontological resources are present in the general area of the Proposed Action and Action Alternative. Sediments with varying potentials (or sensitivities) to contain paleontological resources have been identified in the project area. With adherence to the mitigation measures described in **Section 4.4.2.5** minor impacts to paleontological resources would result. If significant fossils were found during construction, they would be mitigated under direction of the BLM by a qualified and BLM-permitted paleontologist. Disturbance of areas with high potential for containing paleontological resources would be avoided to the extent possible as addressed in a Construction, Operation, and Maintenance Plan (COM Plan) that would be developed and reviewed by the BLM prior to construction.

Soils

Minor physical and chemical changes to the soil are expected to occur due to mixing during initial salvage operations and when placed in stockpiles for future reclamation use. Physical impacts to soil resources during construction and reclamation would include compaction and crushing of the soil and soil crust by equipment during salvage and stockpiling. Physical effects of soil compaction would be short-term, minor to moderate, and include reduced permeability and porosity, damage to microbiotic crusts, increased bulk density, decreased available water holding capacity, increased erosion potential, reduced gaseous exchange, and loss of soil structure. Potential impacts to soil resources would be similar for the Proposed Action and Action Alternative. Reclamation of the temporarily disturbed areas would return these soils to productivity by being utilized as growth medium in reseeded areas, while unreclaimed areas would be permanently eliminated from potential production.

Air Quality

The Proposed Action and Action Alternative include construction and operation of the same general substation facilities (RSS-Site B sub-alternative located approximately 4 miles south) as well as linear transmission and telecommunication facilities, with slight differences in the linear route alignments between Robinson Summit and Harry Allen Substations. The construction activities would generate air pollutant emissions. However, there would be little difference as far as quantities of construction emissions between the Proposed Action and the Action Alternative, operational impacts would be minor, associated with routine maintenance surveys, maintenance activity that would represent a fraction of the construction emissions profile, and small quantities of SF_6 loss from gas-insulated electrical equipment that would make a minor contribution of greenhouse gas. Both the Proposed Action and the Action Alternative would meet federal and state air quality standards.

Vegetation

<u>Vegetation</u>

Both permanent and temporary vegetation impacts would occur as a result of construction, operation, and maintenance of the ON Line Project. Impacts would occur during construction where project elements would be built, resulting in vegetation loss. These impacts would be long-term where permanent facilities are built. Temporary impacts to vegetation would occur at construction-related disturbances that would then be reclaimed after construction. **Tables 4.7-1** and **4.7-4** show the approximate acres of permanent impacts of the Proposed Action and the Action Alternative by vegetative community.

<u>Noxious and Non-native, Invasive Weeds</u>

A total of 16 noxious and non-native, invasive weed species were identified for the project area through existing data and field observations (**Table 3.7-1**). The spread of these species through new disturbance areas related to construction of the ON Line Project is an issue of concern. A BLM Weed Risk Assessment for Noxious and Non-Native, Invasive Weeds was completed, and an Integrated Weed Management Plan to be prepared as part of the COM Plan and approved by the BLM Weed Coordinator for the ON Line Project would address the control of noxious weed communities in the project area to address this concern.

<u>Special-Status Plant Species</u>

Hanging bladderpod, a species that has no federal or state status but is considered at-risk by the Nevada Natural Heritage Program (NNHP), was found along an unnamed ephemeral channel at the Robinson Summit Substation site. Areas of the SWIP Utility Corridor contain sensitive species including: White River catseye (*Cryptantha welshii*) and Tiehm's blazing star (*Mentzelia tiemhii*). Special-status plant species have the potential to occur in locations within the project area that contain suitable habitat and resource conditions, particularly in Lincoln and Clark counties. During the design of project facilities, structures would be sited to avoid known special-status plant communities within the project area to the greatest extent practical. Pre-construction surveys would also allow for avoidance of special-status plant communities within the project area to the extent practical. Impacts to special-status plant communities would be mitigated, if not avoided, according to appropriate measures identified in the COM Plan and Restoration Plan approved by the BLM botanist, thereby rendering impacts to special-status plant communities negligible.

Wildlife

Big game species within the project area consist primarily of pronghorn antelope (*Antilocapra americana)*, mule deer (*Odocoileus hemionus*), Rocky Mountain elk (*Cervus canadensis nelsoni*), and two subspecies of bighorn sheep *(Ovis canadensis nelsoni* and *Ovis canadensis canadensis)*. The following categories of wildlife are abundant, widespread, and inhabit or forage within the majority of the project area: bats, small mammals, predatory mammals, reptiles, migratory birds, and upland game birds.

Sensitive species are known to occur within the two BLM Districts that encompass the project area. The higher profile species include the Bald eagle (*Haliaeetus leucocephalus*), desert bighorn sheep (*Ovis canadensis nelsoni*), pygmy rabbit (*Brachylagus idahoensis*), western burrowing owl *(Athene cunicularia hypugaea)*, banded gila monster (*Heloderma suspectum cinctum*), dark kangaroo mouse (*Microdipodops megacephalus*), and montane vole (*Microtus montanus*).

The project area is home to many types of raptors including hawks, owls, eagles, accipiters, and falcons. The habitat types in the project area provide numerous nesting, perching, and foraging opportunities for a variety of raptor species from early spring (February/March) to late summer (August). Surveys for raptor nests in high potential habitats occurring within portions of the project area were conducted for this FEIS. Twelve species of raptors were observed during baseline surveys. **Figures 3.8-3a-b** show the location of previously recorded and newly identified known raptor areas and nest locations within 2 miles of the project area.

Sagebrush vegetation communities, comprising nearly 25 percent of the project area, have been identified as Priority A habitat under the *Coordinated Implementation Plan for Bird Conservation in Nevada*. Priority A habitat is defined as habitat being under high threat, having high opportunity, and high value to birds statewide (Nevada Steering Committee Intermountain Joint Venture 2005).

Wildlife observed within the project area is listed in **Appendix 3D**.

The ON Line Project would permanently impact wildlife habitat at the Robinson Summit Substation (or at the RSS-Site B sub-alternative) and within portions of the long-term ROWs for the transmission line facilities. These impacts to wildlife would likely be long-term but minor, as the vegetative communities/wildlife habitat present within each of the project elements are common and widespread throughout the area. Indirect impacts would result from the temporary displacement of species utilizing these areas into adjacent undisturbed areas. Some small and less mobile wildlife species could potentially be killed or injured during construction activities.

Power line structures can provide hunting and roosting perches and nesting support for many raptor species that can prey upon pygmy rabbits. Proposed modified structure designs would assist in attempting to minimize hunting and roosting perching opportunities within and near suitable habitat.

<u>Threatened, Endangered, Proposed, and Candidate Species</u>

The United States Fish and Wildlife Service (USFWS) identified four threatened, endangered, proposed, and candidate (TEPC) species listed under the Endangered Species Act that are known or expected to occur within the counties where the Proposed Action and Action Alternative are proposed (USFWS 2007a). These species include desert tortoise (*Gopherus agassizii* - Mojave Population), Yuma clapper rail (*Rallus longirostris yumanensis)*, southwestern willow flycatcher (*Epidonax traillii extimus*), and western yellow-billed cuckoo (*Coccyzus americanus)*. In addition, the greater sage-grouse (*Centrocercus urophasianus*) has recently been identified as a candidate species. Impacts to the desert tortoise are anticipated as transmission line Segments 9, 10, and 11 would occur within desert tortoise critical and known suitable habitat. No suitable habitats for the other three species are present within or adjacent to the project area. Potential for direct impacts to the desert tortoise are expected to be either avoided or greatly minimized through the implementation of BMPs and applicable mitigation measures identified in applicable Biological Opinions. Impacts to greater sage-grouse would be negligible to moderate and short-term during construction with minor, long-term impacts on potentially suitable habitat. Greater sage-grouse leks in close proximity to transmission line facilities could be abandoned; therefore, the ON Line Project would have both short-term and long-term impacts on greater sage-grouse. Proposed modified structure designs would assist in attempting to minimize hunting and roosting perching opportunities within and near suitable habitat.

Range

The ON Line Project would be constructed on a landscape dominated by arid rangelands. Most of these lands are managed by the BLM for multiple compatible uses and are divided into grazing allotments used principally for cattle grazing, some sheep grazing, and wildlife habitat. The facilities of the ON Line Project would be constructed and operated across 28 grazing allotments and 1 herd management area (HMA). Some allotments and HMAs have several springs and/or developed water sources while others may have only one water source. All water sources within the ON Line Project would be avoided whenever possible, as there is some flexibility in locating the actual structures and temporary work areas, thus reducing direct disturbances to existing water sources used by livestock or wild horses. Some grazing land that is permanently occupied by project facilities would be removed from localized grazing use for the long-term. Temporary construction areas could restrict grazing during construction but would be restored to grazing use through reclamation activities after construction. The level of project impacts to any one allotment or HMA depends upon the surface disturbance within each allotment or HMA. Impacts to range resources, including the White River and Jakes Unit Sheep Trails, would be negligible.

Cultural Resources

Cultural resource sites eligible for the National Register of Historic Places (NRHP) are present within the project area. All such sites would be avoided through project design to the extent possible. Impacts that could not be avoided would be lessened through project design and mitigated through data recovery according to a treatment plan approved by the BLM archaeologist and the Nevada State Historic Preservation Office. Impacts to cultural resources would be negligible to minor and may constitute an adverse effect per NHPA.

Native American Concerns

Various tribes have been consulted or informed of the proposed project components, and no specific concerns have been raised to date by these various tribes regarding any religious site, sacred site, or traditional cultural property. If Native American concerns emerge through consultation, BLM will consult with the appropriate tribe(s) and individuals to obtain information about those concerns, the importance of the resource, and what mitigation measures might be appropriate, such that BLM can determine an appropriate course of action taking that information into account.

Land Use and Realty

Construction, operation, and maintenance of the ON Line Project would largely occur within the SWIP Utility Corridor already designated for this land use. Other project-related features such as the Robinson Summit Substation (or RSS-Site B sub-alternative) and portions of the transmission and telecommunication facilities that deviate from the SWIP Utility Corridor would be built according to authorizations issued by the BLM. These changes would be in keeping with the applicable BLM Resource Management Plan (RMP) and local land use plans.

Special Designation Areas

Three special designation areas (SDAs) would be within and four would be immediately adjacent to components of the ON Line Project. These areas may experience minor impacts from noise and dust and viewshed intrusions during construction or operation of project components.

Recreation

Dispersed recreation on public lands dominates recreation in the rural areas around the project area. The 2004 Nevada State Comprehensive Outdoor Recreation Plan (SCORP) identified the desire to protect, maintain, and increase public access to public lands as the top recreation management priority for the State of Nevada. Neither the Proposed Action nor Action Alternative would conflict with existing BLM RMPs across the project area. Management objectives related to recreation would remain viable and implementable. There are very few developed recreation facilities in the project area. The ON Line Project would cross or approach a number of designated recreation areas, including the Kirch Wildlife Management Area, Pahranagat National Wildlife Refuge, and Desert National Wildlife Refuge. However, access to these areas should be unaffected by construction activities.

Visual

All of the components of the Proposed Action would meet management objectives for visual resources when viewed from the Key Observation Points (KOPs). The Segment 10 (sub-alternative) alignment of the Action Alternative, which crosses a VRM Class II designation area, would not meet management objectives because of the adjacent visually sensitive wilderness area.

Noise

Maximum construction noise impacts would be 50 dBA within 1 mile and 45 dBA at 1.5 miles with the earth moving and construction equipment anticipated to be used. When helicopters are used occasionally, their noise levels could briefly reach up to 61 dBA within 1.5 miles. Construction noise impacts would be temporary and of short duration at any given location. Noise impacts to the nearest residential locations during construction and operation of the ON Line Project would be temporary and minor.

Socioeconomics

Construction and operation of the ON Line Project would result in economic benefits for both White Pine and Lincoln counties. Wages and employment would temporarily increase in the area, and both counties would experience a major, but temporary increase in sales tax revenue during the construction phase. The impact on property tax revenue in both counties would be long-term but minor. The construction phase of the ON Line Project may create a short-term, temporary, and minor population increase in the area.

Environmental Justice

Minority populations of Native Americans occur in Nye and White Pine counties and a large population of persons living at or below the poverty level occur in Lincoln County. No populations living at or below the poverty level are concentrated in any geographically identifiable area, and minority populations would not experience any disproportionate adverse effects from the project, during construction or operations. Overall, there would be negligible disproportionate impacts on minority or low-income households from construction of the ON Line Project.

Hazardous Materials and Solid Waste

Hazardous materials would be used during construction of the ON Line Project. The largest quantities of these materials would be diesel fuel, gasoline, and propane for on-site vehicles. Compressed gas cylinders would be used for welding, cutting, and other metal work during construction. All of these materials would be stored and used in compliance with federal and state regulations, including spill controls for storage areas.

Solid wastes that would be generated and managed during construction of the project would include construction debris, office waste, workforce sewage, and small amounts of chemical waste from paints, cements etc. All solid wastes produced in the construction and operation of the project would be disposed of in existing, permitted waste disposal facilities in the general vicinity. Utilizing best management practices for handling these wastes would result in negligible environmental impacts.

Transportation

Construction of the ON Line Project would result in an influx of construction workers, which would add to the Average Annual Daily Traffic (AADT) on US-93. However, this increase would not change the Level of Service (LOS) rating (traffic flow) of the highway (HDR et al. 2007). Impacts to transportation during construction would be temporary and minor. Impacts to transportation during operation and maintenance would be long-term and negligible.

COMPARISON SUMMARY OF ENVIRONMENTAL IMPACTS FOR THE PROPOSED ACTION, ACTION ALTERNATIVE, AND AGENCY PREFERRED ALTERNATIVE

IMPACT		PROPOSED ACTION (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)	ACTION ALTERNATIVE (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9B, 9C, 9D, AND 11)	AGENCY PREFERRED ALTERNATIVE (INCLUDES RSS-SITE B SUB-ALT AND FALCON SUBSTATIONS, AND PROPOSED ACTION SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)
Water Resources				
Acreage of wetlands impacts	ST	0	Same as Proposed Action	Same as Proposed Action
	LT	0	Same as Proposed Action	Same as Proposed Action
Number of perennial streams spanned		2	Same as Proposed Action	Same as Proposed Action
Geology and Minerals				
Potential effects on topography		Minor	Same as Proposed Action	Same as Proposed Action
Number of mining, oil, gas, and/or geothermal claims potentially impacted		0	Same as Proposed Action	Same as Proposed Action
Paleontological Resources				
Potential to encounter paleontological resources		Low to High, depending on area Robinson Summit Substation has high potential	Same as Proposed Action	Low to High, depending on area RSS-Site B sub-alternative has low potential
Soils				
Acreage Temporarily Disturbed		7,809	7,795	7,826
Acreage Permanently Disturbed		787	782	741
Air Quality				
Would NAAQS be exceeded?		No	No	No
Vegetation				
Five vegetation types with the most acreage permanently impacted, plus winterfat		• Creosote – 148 • Douglas rabbitbrush - 13 • Joshua Tree - 10 • Pinyon juniper - 22 • Wyoming/Black sagebrush – 134 • Winterfat – 7	• Creosote – 152 • Douglas rabbitbrush – 12 • Joshua Tree - 10 • Pinion-juniper – 24 • Wyoming/Black sagebrush – 137 • Winterfat – 6	• Creosote -148 • Douglas rabbitbrush - 13 • Joshua Tree – 10 • Pinyon juniper - 18 • Wyoming/Black sagebrush –107 • Winterfat - 7
Noxious and non-native, invasive weed risk assessment		Low to moderate, depending on area Areas of moderate risk: Robinson Summit Substation, Segment 11	Same as Proposed Action	Low to moderate, depending on area Areas of moderate risk: Segment 11
Special-status plant species observation locations that could be impacted		Segments 6C and 9B	Segments 6C, 9B, and 9C	Segments 6C and 9B

IMPACT	PROPOSED ACTION (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)	ACTION ALTERNATIVE (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9B, 9C, 9D, AND 11)	AGENCY PREFERRED ALTERNATIVE (INCLUDES RSS-SITE B SUB-ALT AND FALCON SUBSTATIONS, AND PROPOSED ACTION SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)
Wildlife Resources, Including Special Status Wildlife, Fisheries, and Aquatic Species			
Number of potentially occupied greater sage-grouse leks within 2 miles (includes active, inactive, and unknown leks)	5	8	8
Pygmy rabbit observation locations that could be impacted	Segment 6C	Same as Proposed Action	Segment 6C, RSS-Site B sub-alternative and access roads
Potential Kangaroo Mouse Habitat that could be impacted	RSS, plus Segments 6C, 8, and 9B	Same as Proposed Action	RSS-Site B sub-alternative, plus Segments 6C, 8, and 9B
Areas of pronghorn antelope range impacted	Segments 6C, 8, and 9C, excluding higher elevations	Same as Proposed Action	RSS-Site B sub-alternative, Segments 6C, 8, and 9B, excluding higher elevations
Impacts to fisheries and aquatic resources	None to negligible	Same as Proposed Action	Same as Proposed Action
Acres of desert tortoise habitat permanently impacted	434 acres	428 acres	Same as Proposed Action
Areas of mule deer crucial winter range impacts	Portions of Segments 6C and 8	Same as Proposed Action	Same as Proposed Action
Raptor (including eagles) nesting areas within 2 miles	Ferruginous hawk: Segment 6C and nest observations along Segment 8	Same as Proposed Action	Ferruginous Hawk: RSS-Site B sub-alternative (inactive nest observations), Segment 6C and nest observations along Segment 8
Range Resources			
Number of grazing allotments Impacted	28	Same as Proposed Action	Same as Proposed Action
Number of Herd Management Areas (HMAs) Impacted	1	Same as Proposed Action	Same as Proposed Action
Cultural Resources			
Number of or Projected Acres of NRHP-Eligible Sites impacted	2 sites + 205 acres	2 sites + 198 acres	3 + 198 acres
Native American Concerns			
Impacts to Places of Cultural and/or Geographic Interest to Tribes potentially impacted	5	4	5
Land Use			
Long-term ROW acres of BLM lands for the project	5,789	5,790	5,854
Long-term ROW acres of private, state or other agency lands for the project	38	13	38

IMPACT		PROPOSED ACTION (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)	ACTION ALTERNATIVE (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9B, 9C, 9D, AND 11)	AGENCY PREFERRED ALTERNATIVE (INCLUDES RSS-SITE B SUB-ALT AND FALCON SUBSTATIONS, AND PROPOSED ACTION SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)
Special Designation Areas (SDAs)				
Number of SDAs with project components within their boundary		3	Same as Proposed Action	Same as Proposed Action
Recreation				
Overall impact to recreation		Short-term, negligible to major Long-term, negligible to minor	Same as Proposed Action	Same as Proposed Action
Visual Resources				
Developments potentially not consistent with BLM Visual Resource Management Classification designation		None	Same as Proposed Action	Same as Proposed Action
Noise				
Noise impacts to nearest residence	ST	Minor	Same as Proposed Action	Same as Proposed Action
	LT	Negligible	Same as Proposed Action	Same as Proposed Action
Socioeconomics				
Peak fiscal impact to local government	ST	Sales Tax Revenue - Major	Same as Proposed Action	Same as Proposed Action
	LT	Property Tax Revenue - Minor	Same as Proposed Action	Same as Proposed Action
Employment	ST	Moderate	Same as Proposed Action	Same as Proposed Action
	LT	None	Same as Proposed Action	Same as Proposed Action
Environmental Justice				
Disproportionate effects to minority or low income populations		Negligible	Same as Proposed Action	Same as Proposed Action
Hazardous Materials and Solid Waste				
Anticipated environmental effects from use of hazardous materials		Negligible	Same as Proposed Action	Same as Proposed Action
Transportation				
Impacts to transportation	ST	Minor to moderate	Same as Proposed Action	Same as Proposed Action
	LT	Negligible	Same as Proposed Action	Same as Proposed Action

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Chapter 1
Introduction - Purpose and Need

1.1 Introduction

This Final Environmental Impact Statement (FEIS) was prepared in response to an amended SF 299 application for the One Nevada 500 kV Transmission Line (ON Line Project) submitted on March 30, 2009, by Sierra Pacific Power Company and Nevada Power Company, now doing business as NV Energy (the Proponent). This document will evaluate and disclose potential impacts of the proposed development of the ON Line Project and aid the Bureau of Land Management (BLM) in making a decision on whether or not to authorize the requested rights-of-way (ROW) to NV Energy.

NV Energy is proposing to develop a company-owned and -operated 500 kilovolt (kV) transmission line and associated 500/345 kV substation and communication facilities located in White Pine, Nye, Lincoln, Eureka, and Clark counties, Nevada. The project would include: a new 500/345 kV substation referred to as Robinson Summit Substation located in White Pine County, a new 236-mile long 500 kV transmission line and fiber optic communication facilities from the proposed Robinson Summit Substation to the existing Harry Allen Substation located in Clark County, addition of new 500 kV electrical facilities inside the existing Harry Allen Substation, a loop-in of the existing Falcon-Gonder 345 kV transmission line at the Robinson Summit Substation, an expansion of the Falcon Substation through installation of new 345 kV electrical equipment located in Eureka County, and associated access roads into and along the transmission line. These project components are shown in **Figure 1.1-1**.

These electrical and communication facilities were previously proposed as components of the former Ely Energy Center (EEC) Project, which consisted of the facilities described above plus: another parallel 500 kV transmission line, a 1,500 MW coal-fired power plant located north of Ely, power plant water supply, rail connections to the power plant, and ancillary facilities supporting the power plant. A draft EIS evaluating the entire EEC (NV-040-09-001) was released on January 2, 2009, for a 90-day public comment period. On February 9, 2009, NV Energy announced its decision to postpone construction of the EEC power plant and associated supporting facilities and to continue with the permitting and development of the substation, transmission, and communication components between its southern and northern service territories, and upgrade of existing substations, now referred to as the ON Line Project. Due to the indefinite postponement of the EEC Project and the submittal of a revised Plan of Development for the ON Line Project, the EEC Project will not be considered or analyzed in this FEIS, even as a reasonably foreseeable future action for cumulative impacts in Chapter 5.

This FEIS addresses impacts from the construction, operation, and maintenance of the ON Line Project. This document was prepared in compliance with the National Environmental Policy Act (NEPA (42 U.S.C. 4321); regulations of the Council on Environmental Quality (CEQ), (40 CFR 1500-1508); BLM's *NEPA Handbook*, H-1790-1; and the BLM's *Ely District Office Environmental Analysis Guidebook*.

1.2 Purpose and Need of the Proposed Action

The BLM's purpose of the proposed action is to provide NV Energy appropriate ROW access to construct and operate a long-term commercial transmission facility to improve energy transmission system reliability within Nevada. The BLM's need for the action is to respond to NV Energy's SF 299 application for ROWs (long-term and short-term) under Title V of the Federal Land Policy and Management Act (FLPMA) (43 U.S.C. 1761-1771).

1.3 Agency Decision to be Made

The BLM is required to evaluate and make a decision regarding the granting of ROWs in response to NV Energy's SF 299 application for the ON Line Project. The BLM will issue a Record of Decision based on the analyses provided in this FEIS.

1.4 Proposed Action Summary

On March 30, 2009, NV Energy submitted an amended SF 299 *Application for Transportation and Utility Systems and Facilities on Federal Lands* to the BLM for the ON Line Project, which is a subset of the original EEC Project (BLM 2009a). The ON Line Project would cross public lands administered by the BLM's Ely and Southern Nevada District Offices. As explained by NV Energy, the objective of the ON Line Project is to meet the electrical transmission needs in Nevada and the western United States by interconnecting NV Energy's northern and southern electrical systems. This connection would improve system efficiency, reliability, and flexibility by allowing NV Energy's northern and southern service areas to share energy resources, better support each other during power emergencies, and provide better access to the state's renewable energy resources.

There is a current lack of transmission capacity in the western United States, which impedes development of renewable energy resources. Many renewable energy zones identified in Nevada are in remote regions that do not possess access to the transmission system grid that would enable transfer of that energy across the state (Nevada RETAAC 2007). The western United States and Nevada in particular has a critical need for long-distance energy transport infrastructure due to location of population centers and remotely located energy generation facilities or potential energy sources.

The Public Utilities Commission of Nevada (PUCN) Order (PUCN 2007) acknowledges that in order for NV Energy to meet its statutory obligations providing renewable energy developers with a transmission pathway to market, it needs to interconnect its north and south electrical systems. The Energy Policy Act of 2005, specifically Section 368, addresses the need for additional electricity infrastructure and directs agencies to consider the need for upgraded and/or new infrastructure, and to take actions to improve reliability, relieve congestion, and enhance the capability of the national grid to deliver energy.

In order for NV Energy to efficiently provide energy resources where they are most needed, the Proponent must interconnect its southern and northern electric systems. This would provide flexibility and reliability to the system through access to other energy resources during emergencies or periods of high use.

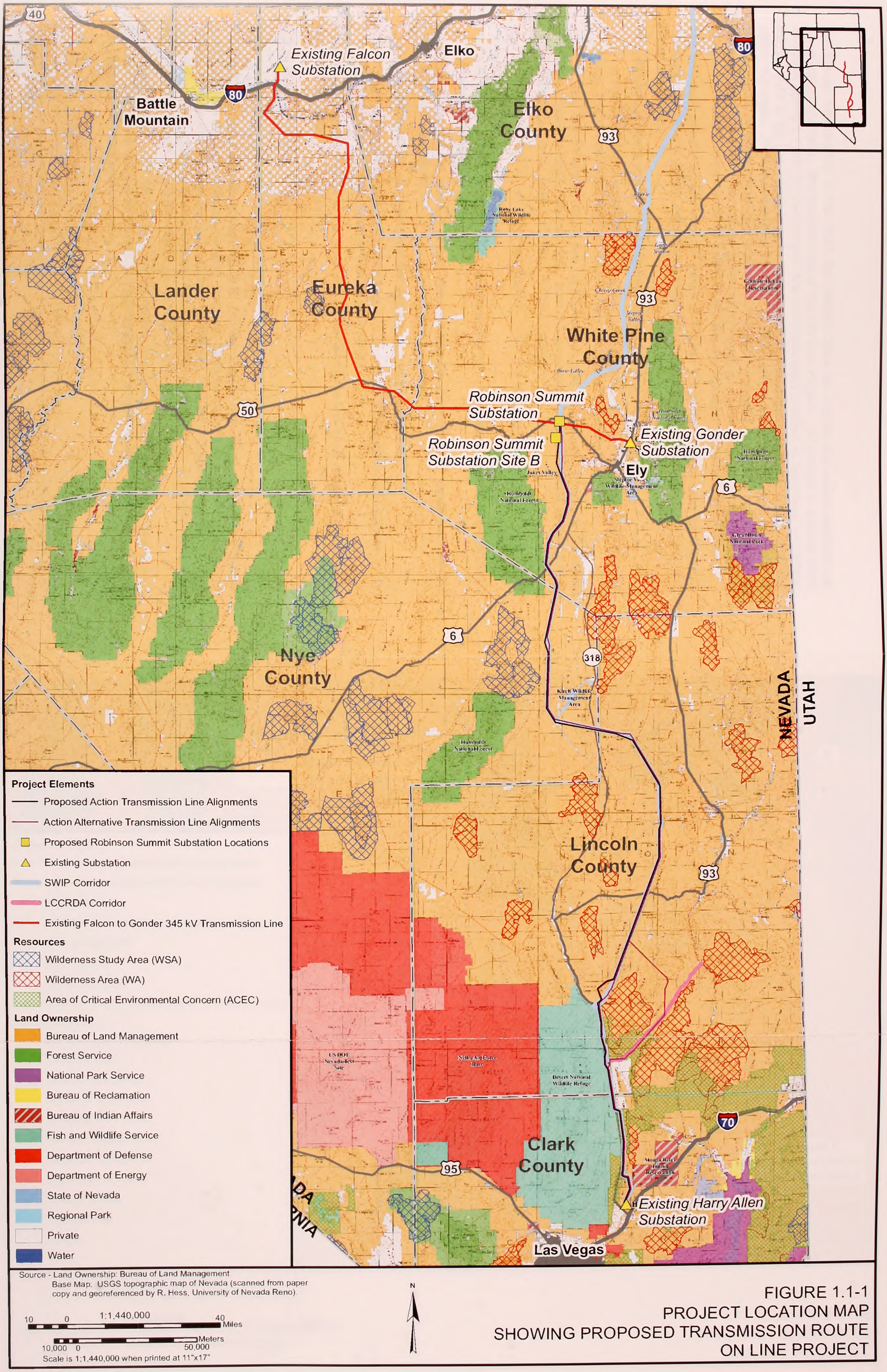

FIGURE 1.1-1
PROJECT LOCATION MAP
SHOWING PROPOSED TRANSMISSION ROUTE
ON LINE PROJECT

NV Energy has applied to the BLM Ely District Office for ROWs that would authorize its construction, operation, and maintenance of the ON Line Project. NV Energy is seeking these ROWs to develop a 500 kV transmission line and associated facilities as described below from the Ely area to the Las Vegas area to interconnect its two electrical systems for the first time within the state. This transmission line and facilities would allow NV Energy to share its southern and northern generation resources, access renewable resources in northeastern Nevada, and increase the diversity of power supply options. These facilities would primarily be located on federal land administered by the BLM's Ely and Southern Nevada District Offices.

The proposed general project area is shown in **Figure 1.1-1**. The project area includes the Proposed Action and Action Alternative footprints (including areas for both temporary and permanent ROWs).

The proposed project's electrical and communications facilities would include:

- A new 500/345-kV substation referred to as the Robinson Summit Substation adjacent to the Southwest Intertie Project (SWIP) Utility Corridor in White Pine County;
- A new 500-kV transmission line, approximately 236 miles long almost entirely within designated federal utility corridors, from the proposed Robinson Summit Substation to the existing Harry Allen Substation in Clark County;
- Addition of new 500-kV electrical facilities inside the existing footprint of the Harry Allen Substation;
- A loop-in of the existing Falcon–Gonder 345-kV transmission line at the Robinson Summit Substation;
- Expansion of the existing Falcon Substation in Eureka County to install new 345-kV electrical equipment;
- Access roads into and along the transmission line alignments; and
- Fiber optic communication facilities built into and along the transmission line that would be ancillary to and in support of the ON Line Project.

A more complete description of the Proposed Action elements and other project alternatives is included in **Chapter 2**.

1.5 Background

1.5.1 Population Growth in Nevada

The 2007 population estimates from the U.S. Census Bureau showed Nevada as the fastest growing state in the United States. In 2008, however, Nevada dropped from No. 1 to No. 8 on a ranking of America's fastest growing states. Even so, Nevada's population grew by 30.1 percent from April 1, 2000, to July 1, 2008. This compares to the nation's population rise of 8.0 percent over the same period (Bureau of Census 2009).

NV Energy serves over 95 percent of the state's population; 71.5 percent of the state's population resides in Clark County, and approximately 23.5 percent resides in northern Nevada (i.e., Reno/Carson City area).

1.5.2 Proponent History

Nevada Power Company (NPC) and Sierra Pacific Power Company (SPPC) merged in 1999 and changed their names to NV Energy in 2008. NV Energy's combined service areas cover approximately 54,000 square miles with more than 2 million customers throughout Nevada and in northeastern California.

NV Energy's southern service area encompasses nearly 4,000 square miles and serves more than 770,000 electricity customers in Las Vegas, North Las Vegas, Henderson, and other communities and homes in Clark and Nye Counties. NV Energy's northern service area encompasses more than 50,000 square miles in western, central, and northeastern Nevada and northeastern California and serves approximately 300,000 customers.

NV Energy's northern and southern electric transmission systems are not electrically connected at the present time, which is one important reason for the ON Line Project.

1.5.3 Regulatory Requirements

NV Energy is regulated by the PUCN and the Federal Energy Regulatory Commission (FERC), among others. Nevada adopted its first comprehensive statutory least-cost utility planning process in 1983. This is now referred to as the Integrated Resource Planning Process. This planning process requires all Nevada retail electric distribution utilities under the jurisdiction of the PUCN to file an Integrated Resource Plan (IRP) every three years detailing their future 20-year resource acquisition strategy to meet customer growth. The IRP is based on forecasts of customer load requirements, and is required by statute to include plans to meet load growth.

In 2006, NV Energy developed its IRP to optimize energy supply using a portfolio approach (diversity of fuel supply, renewables, and conservation), which sought to balance electricity costs, supply, reliability, fuel, short-term and long-term power market volatility, and environmental acceptability.

In the 2006 IRP, NV Energy proposed:

- The EEC Project.
- An aggressive conservation program.
- Commitments to promote renewable energy development.
- Investments in transmission infrastructure to connect its northern and southern electrical systems and bring new, renewable energy resources to market.

In June 2006, NPC filed its IRP for 2007-2026, followed by SPPC's July submittal of the 13th Amendment to its 2005-2024 IRP (Docket Nos. 06-06051 and 06-07010). The IRP filings reflected the electrical needs of the two service territories for the next 15 years. The PUCN subsequently consolidated the filings and issued an Order in November 2006 (a Revised Order was issued January 2007), which approved NV Energy's request to proceed with the development of Phase 1 of the EEC Project, including the facilities proposed now as the ON Line Project. The PUCN focused its Order on:

- NV Energy's large and growing "open position" (the difference between available power supply and customer demand plus reserve) at a time of impending capacity shortages.
- NV Energy's aging fleet of coal-fueled plants.

- The need to upgrade and modernize NV Energy's resource portfolio by adding company-owned or -controlled baseload capacity.
- Diversification of the resource mix to provide a hedge against natural gas price volatility.
- The cost consequences associated with a delay in the development of coal-fueled generation, expected to be between $200 and $300 million per year.
- The lack of PUCN control over independent power producers' generation development.

Specifically the PUCN Order acknowledges the following:

> *The [ON Line Project] intertie will promote reliability, promote diversity of supply resources, and assist with the development of renewable resources. In addition, the intertie will aid in the development of renewable energy resources by allowing electricity generated by non-solar renewable resources in northern Nevada to be delivered to southern Nevada and electricity generated by solar resources in southern Nevada to be delivered to northern Nevada. Further, the intertie will allow for the development of wind resources in eastern Nevada to both northern and southern Nevada. Therefore, the intertie will assist [NV Energy] to meet its statutory obligations by providing renewable energy developers with a pathway to market (PUCN 2007, p.58).*

A 2009 IRP was filed with the PUCN on February 1, 2010; the PUCN ruled on the 2009 IRP on July 30, 2010 (PUCN 2010). This ruling included the PUCN's approval for NV Energy to proceed with the ON Line Project under either the Self-Build Option or the Joint Project with Great Basin Transmission LLC (see **Section 1.5.7**).

1.5.4 Nevada Renewable Energy Transmission Access Advisory Committee (Nevada RETAAC)

In 2007, Governor Jim Gibbons issued an Executive Order forming the Nevada Renewable Energy Transmission Access Advisory Committee (RETAAC) and tasking the committee with evaluating potential renewable energy resource locations in Nevada, assessing existing and planned transmission access to these resources, and making recommendations for additional transmission lines. As a result of the Nevada RETAAC studies, numerous renewable energy zones have been identified in Nevada (NRETAAC 2009). These zones include 8 wind zones, 5 geothermal zones, 3 biomass zones, and 3 solar zones (**Appendix 1A**). The solar zones are generally located in the southern portion of the state, while wind zones are scattered throughout the state. Geothermal resources occur in the northern and central portion of the state. The biomass zones are generally located near Reno, Ely, and south of Ely. The minimum voltage for effective transmission of renewable energy is 230 kV. Of the 19 renewable energy zones, 9 (2 solar, 3 wind, 2 geothermal, 2 biomass) are located in eastern Nevada and would be in proximity to the ON Line Project and could potentially interconnect with the grid via the proposed transmission line.

1.5.5 Growth in Forecasted Demand

The need for additional generating and transmission resources in Nevada is well supported and recognized by state and local leaders.

The combined growth rate of NV Energy's energy demand translates to approximately 250 to 300 MW of additional capacity required each year resulting in greater electricity demands per capita than most other regions. Meeting load growth is a requirement of regulated utilities under

Nevada State law (NRS 704). Transmission of electricity produced by potential new generating capacity located throughout NV Energy's system is integral to meeting the anticipated growth in demand and the requirement for renewable energy generation.

1.5.6 NV Energy's Objectives for the ON Line Project

NV Energy is a regulated utility. As such, NV Energy's objectives below are in direct response to the directives provided by the PUCN in the Revised Order (PUCN Revised Order, pages 55-58) described in **Section 1.5.3**. Specifically, the objectives of NV Energy's Proposed Action are to:

- **Connect NV Energy's southern and northern electric systems for the first time to improve system reliability and flexibility.** This transmission line intertie would allow the company to share energy resources, be more efficient, and better support each system during power emergencies. The joint dispatch (i.e., two systems sending electricity into the interconnected grid) opportunities that would be created by a direct transmission interconnection would reduce the cost of incorporating intermittent resources in the southern and northern systems. A direct transmission interconnection would provide direct operational savings through load diversity, as the coincident peaks of the two systems together would be less than the sum of the coincident peaks of two separate systems. Further, by providing a direct transmission interconnection between the southern and northern systems, each would be able to support the other during outages and other events, improving the reliability of both systems.
- **Provide better access to the state's renewable energy resources.** There are numerous wind energy and geothermal renewable projects in various stages of planning or development in northern and eastern Nevada. A critical part of developing these renewable resources is providing the electric transmission infrastructure to move the power from the sources to the customers. The high-voltage transmission line being proposed would provide capacity for renewable energy and interconnect and transmit power from these remote locations to major load centers in Las Vegas and Reno. Nevada's Renewable Portfolio Standard mandates that electric providers furnish not less than 25 percent of the total amount of electricity generated, acquired, or saved from portfolio energy systems or efficiency measures to their retail customers by 2025 (Nevada Assembly Bill 358 Section 13.5, 2009). The ability for renewable generation facilities to more easily tie into the existing transmission system is critical to meeting this standard.

1.5.7 Designated Utility Corridor and ROW Authorization

Segments of two designated federal utility corridors exist in the project area: segments 110-233, 232-233, and 37-232 of the West-Wide Energy Corridor (WWEC) and the southern portion of the SWIP Utility Corridor. These corridor designations address the same utility corridor footprint within which the proposed project is sited. The SWIP Utility Corridor studies were initiated in the early 1990s as part of the SWIP Transmission Line Project (BLM 1993). The SWIP Utility Corridor was designated in the Ely District Record of Decision and Approved Resource Management Plan (BLM 2008a) and the Record of Decision for the Approved Las Vegas Resource Management Plan (BLM 1998a). The WWEC was designated in January 2009 by a Record of Decision designating some 5,000 miles of energy corridors on BLM lands. The WWEC Programmatic EIS (PEIS) (BLM 2009b) examined the impacts of corridor designation in 11 western states; 3,500-foot-wide utility corridors were studied in many areas. The WWEC

designated in 2009 adopted the SWIP Utility Corridor route through eastern Nevada. Within the project area, the utility corridor widths vary from 2,640 to 3,500 feet.

The SWIP-South Transmission Line Project, also known as the Great Basin Transmission Line, is part of an authorized ROW (NVN-49781) for a 500 kV transmission line approximately 495 miles in length that was granted in 1994 after a Record of Decision and Approved Land Use Plan Amendment (ROD/LUPA) were issued by the BLM (BLM 1994). Two minor ROW amendments to the SWIP-South Transmission Line Project were approved in 2008 (BLM 2007d, 2008b), but otherwise the SWIP-South alignment follows and was the basis of the studies for defining the SWIP Utility Corridor. Further, approximately 90 miles of the SWIP Utility Corridor contains an existing Lincoln County and NV Energy 69 kV line. At this time, the SWIP-South ROW is the only approved major (>230 kV) transmission line ROW within the SWIP Utility Corridor. Idaho Power originally secured the permitted SWIP Transmission Line ROW, and then sold its rights to White Pine Energy Associates, who created the Great Basin Transmission LLC (GBT) and transferred the ROW to this entity. This ROW is approximately 1,600 feet east of the proposed ON Line Project. The SWIP-South will be referred to as the GBT Line to avoid confusion in the FEIS with the SWIP Utility Corridor. The GBT Line has yet to be constructed.

On December 30, 2009, NV Energy and GBT executed a Memorandum of Understanding to jointly develop (i.e., construct, operate, maintain) and own the 500 kV transmission line facilities utilizing GBT's existing SWIP ROW authorization (Joint Project). On February 1, 2010, NV Energy filed its 2009 IRP with the PUCN requesting approval of one of two alternative plans for interconnecting its southern and northern electrical systems. The Joint Project represents NV Energy's preferred plan, but it is still subject to the completion of definitive agreements between the parties and FERC approvals. On July 30, 2010, the PUCN approved for NV Energy to pursue the ON Line Project either as the Joint Project, contingent upon agreements and approvals, or the Self-Build Option (PUCN 2010). Due to the uncertainty of completing the agreements and acquiring the necessary regulatory approvals, NV Energy continues with its request for a ROW authorization to construct the ON Line Project facilities (Self-Build Project). Thus, the BLM is continuing with the completion of this FEIS to analyze the environmental impacts of NV Energy's Self-Build Project described herein as the ON Line Project.

1.6 About This Document

This document follows regulations promulgated by the CEQ for implementing the procedural provisions of the NEPA (40 CFR 1500-1508); the BLM NEPA Handbook, H-1790-1; the Ely District Office Environmental Analysis Guidebook; Sections 201 and 202 of the FLPMA, and regulations at 43 CFR Part 1600. This FEIS describes the components of and reasonable alternatives to the Proposed Action, and environmental consequences of this action and the alternatives.

The FEIS is divided into several chapters for ease of reading and to better organize information for decision-making.

Chapter 1 provides general background, the purpose of and need for the Proposed Action; roles of the BLM and cooperating agencies; decisions to be made and authorities regulating the process of analysis and disclosure; a summary of public participation in the EIS process; and key issues to be addressed.

Chapter 2 presents a reasonable range of alternatives to address the stated need and purpose for the project, including the Proposed Action, No Action, and a transmission line alternative to

the Proposed Action; discusses alternatives not carried forward for detailed analysis; lists potential mitigation actions to reduce or minimize impacts; and discusses the agency-preferred alternative.

Chapter 3 describes the affected human environment in the project area.

Chapter 4 discloses potential direct and indirect environmental effects associated with the Proposed Action and other alternatives and discusses potential mitigation measures.

Chapter 5 describes the cumulative effects associated with the Proposed Action and other alternatives.

Chapter 6 lists state and federal agencies and other governmental bodies that were consulted or contributed to the preparation of the FEIS; describes Native American consultations; describes public participation during scoping; lists agencies, organizations, and persons to whom the FEIS will be or has been sent; and provides the names and qualifications of those who prepared this document.

Chapter 7 includes comment letters received from the public and agencies after the release of the DSEIS and agency responses to the comments contained in those letters.

Chapter 8 provides the bibliography of existing information that was used to prepare the FEIS and an index to the document.

Appendices contain information that supplement or support analyses in the body of the FEIS.

1.7 Plans, Policies, and Programs

1.7.1 Relationship to BLM Plans, Policies, and Programs

This FEIS complies with the CEQ regulations for implementation of NEPA (40 CFR 1500-1508), Department of the Interior's Implementation of NEPA Regulations at 43 CFR Part 46, and BLM's NEPA Handbook (H-1790-1).

The proposed project area crosses two BLM Districts administered by the Ely and Southern Nevada District Offices. Each has its own land use management plan that must be followed, and any project elements that would occur on those lands must conform to the respective plans. Resources in Clark County and the southern portion of Nye County fall under the purview of the Las Vegas Resource Management Plan that was approved in 1998. The resources in White Pine, Lincoln, and a portion of Nye County fall under the purview of the Ely District Resource Management Plan dated August 20, 2008.

The Proposed Action would be in conformance with the land use plans' terms and conditions as required by 43 CFR 1610.5-3.

1.7.2 Relationship to Non-BLM Plans, Policies, and Programs

The Proposed Action would be consistent with other federal, state, and local agency plans, policies, and programs by incorporating data and management objectives and adopting mitigation strategies where appropriate. Following is a partial list of state and local plans and programs that have been reviewed and/or consulted:

- Nevada Natural Heritage Program
- Nevada Department of Wildlife - Big Game Status and Quota Recommendations
- Governor's Sage Grouse Conservation Management Plan

- Nevada Recreation Management Strategy and Implementation Plan
- Statewide Comprehensive Outdoor Recreation Plan
- White Pine County Land Use Plan
- White Pine County Elk Plan
- Lincoln County Land Use Plan
- Southeast Lincoln County Multiple Species Habitat Conservation Plan
- Nye County Land Use Plan
- Clark County Land Use Plan
- Clark County Multiple Species Habitat Conservation Plan
- Eureka County Land Use Plan

1.8 Applicable Laws and Regulations

Table 1.8-1 lists federal and state laws and regulations potentially applicable to the Proposed Action and Action Alternative.

TABLE 1.8-1 LAWS AND REGULATIONS THAT MAY BE APPLICABLE TO THE ON LINE PROJECT

LAWS AND REGULATIONS	CITATION
FEDERAL	
New and Amended Federal Right-of-Way Grants/Short-term Use Permits	FLPMA 1976 (PL 94-579) 43 USC 1761-1771 and 43 CFR Part 2800
National Environmental Policy Act (NEPA)	42 USC 4321 et seq.
Council on Environmental Quality (CEQ) general regulations implementing NEPA	40 CFR Parts 1500-1508
Department of the Interior's (DOI) implementing procedures and proposed revisions	65 FR 52212-52241
Bureau of Land Management's (BLM) NEPA Handbook H-1790-1 (2008)	
National Historic Preservation Act (NHPA) and regulations implementing NHPA	16 USC 470 et seq.; 36 CFR Part 800
Antiquities Act of 1906	16 USC 431 et seq.
Archeological Resources Protection Act, as amended (ARPA)	16 USC 470aa et seq.
Native American Graves Protection and Repatriation Act of 1990 (NAGPRA)	25 USC 3001-30013 et seq.
Clean Air Act (CAA)	42 USC 7401 et seq.
Clean Water Act (CWA)	33 USC 1251 et seq.
Endangered Species Act (ESA)	16 USC 1531 et seq.
Noise Control Act of 1972, as amended (NCA)	42 USC 4901 et seq.
Occupational Safety and Health Act (OSHA)	29 USC 651 et seq.
Pollution Prevention Act of 1990 (PPA)	42 USC 13101 et seq.
Safe Drinking Water Act of 1974 (SDWA)	42 USC 300f et seq.
Migratory Bird Treaty Act	16 USC 703-711

LAWS AND REGULATIONS	CITATION
American Indian Religious Freedom Act of 1978	42 USC 1996
Federal Land Policy and Management Act of 1976 (FLPMA)	43 USC 1701 et seq.
Lacey Act as amended	18 USC 42
Nuisance Prevention and Control Act of 1990 as amended	16 USC 4701 et seq.
Federal Noxious Weed Act of 1974 as amended by the Food, Agriculture, Conservation and Trade Act of 1990, Section 1453 "Management of Undesirable Plants on Federal Lands"	7 USC 2801 et seq.
Federal Plant Pest Act	7 USC 150aa et seq.
Carlson-Foley Act of 1968	Public Law 90-583
Safe, Accountable, Flexible, Efficient Transportation Equity Act	Public Law 109-59
Noxious Weed Control and Eradication Act	Public Law 108-412
NEPA, Protection and Enhancement of Environmental Quality	Executive Order 11988
National Historic Preservation	Executive Order 11988
Floodplain Management	Executive Order 11988
Protection of Wetlands	Executive Order 11980
Federal Compliance with Pollution Control Standards	Executive Order 12098
Environmental Justice	Executive Order 12898
Indian Sacred Sites	Executive Order 13007
Consultation and Coordination with Indian Tribal Governments	Executive Order 13084 Executive Order 13175
Invasive Species	Executive Order 13112
Migratory Birds	Executive Order 13186
Memorandum on Government-to-Government Relations with Native American Tribal Governments of 1994 (May 4, 1994)	59 FR 22951
Departmental Responsibilities for Indian Trust Resources	512 DM 2.1
American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act (June 5, 1997)	Secretarial Order 3206
BLM Land Use Permits and Leases	43 CFR Part 2920
BLM Right-of-way Regulations	43 CFR Part 2800, 43 CFR Part 2920
Resource Conservation and Recovery Act (RCRA)	42 USC 6901
National Contingency Plan	40 CFR Part 300
STATE OF NEVADA	
Nevada Critically Endangered Flora Law	NRS 5.27-5.33
Utility Environmental Protection Act	NRS 704.820-704.900
Control of Noxious Weeds	NAC 555.010

1.9 Permits, Licenses, and Other Requirements

Table 1.9-1 lists federal, state, and county permits, licenses, and other approvals that NV Energy may need to implement the Proposed Action or Action Alternative.

TABLE 1.9-1 PERMITS AND LICENSES THAT MAY BE APPLICABLE TO THE ON LINE PROJECT

ACTION REQUIRING A PERMIT, REVIEW, OR APPROVAL	PERMIT/ APPROVAL	ACCEPTING AUTHORITY/APPROVING AGENCY	CITATION
FEDERAL			
All project elements or disturbance on BLM administered lands	Right-of-Way Grant	BLM	43 CFR Part 2800
Right-of-Way Grant	EIS Record of Decision	BLM	40 CFR Part 1500-et.seq.
Right-of-Way Grant	NHPA, Section 106 review and concurrence	BLM Nevada State Historic Preservation Office	36 CFR Part 800 16 USC 470 et seq.
Right-of-Way Grant	ESA, Section 7 consultation and concurrence	BLM U.S. Fish and Wildlife Service Nevada Department of Wildlife	50 CFR Part 17 16 USC 1536
Construction of transmission line structures if the structure is more than 200 feet in height	No Hazard Determination	Federal Aviation Administration	49 USC 1501 14 CFR Part 77
Storage of petroleum	Spill Prevention Control and Countermeasure	U.S. Environmental Protection Agency	40 CFR Part 112
Dredge or fill activities in Waters of the United States	CWA, Section 404 Permit	U.S. Army Corps of Engineers	33 USC 1344
STATE OF NEVADA			
Surface disturbing activities	Section 106 Determination of Effect Concurrence	State Historic Preservation Office	16 USC 470 et seq. NRS 383
Electrical Facilities construction	Utility Environmental Protection Act – Permit to Construct	Public Utilities Commission of Nevada	NRS 704.870-704.900 NAC 703.415-703.427
Surface disturbing activities	Rare and Endangered Plant Permit	Nevada Division of Forestry	NRS 527.260-527.300
Surface disturbing activities	Native Cacti and Yucca Commercial Salvaging and Transportation Permit	Nevada Division of Forestry	NRS 527.050-527.110
Surface disturbing activities	Incidental Take Permit	Nevada Department of Wildlife	NRS 503.584-503.589

ACTION REQUIRING A PERMIT, REVIEW, OR APPROVAL	PERMIT/ APPROVAL	ACCEPTING AUTHORITY/APPROVING AGENCY	CITATION
Construction of proposed facilities	Construction Permit	Nevada Division of Environmental Protection, Bureau of Air Pollution Control	NAC 445B 42 USC 7401
Facilities construction	CWA, Section 402 National Pollutant Discharge Elimination System (NPDES) Notification for Stormwater Management during Construction	Nevada Division of Environmental Protection	33 USC 1251 et seq.
Surface disturbing activities	Surface Area Disturbance Permit	Nevada Division of Environmental Protection	NRS 519A.180 (for small sites) NAC 445B
Construction of access road to a U.S. Highway and crossing of a U.S. Highway with a transmission line	Right-of-way Occupancy Permit	Nevada Department of Transportation	NRS 408.423, 408.210 NAC 408
Transportation of Hazardous Materials	Uniform Permit	Nevada Department of Public Safety	NAC 459.979
Surface disturbing activities	Dust Control Permit	Nevada Department of Environmental Quality	NAC 445B
LOCAL/COUNTY			
Construction and operation in Clark County	Special Use Permit	Clark County Board of Commissioners	Clark County Zoning Ordinance
Construction/fugitive dust – PM_{10} in Clark County	Dust Control Permit	Clark County Department of Air Quality Management	Amendments NRS 321.001 40 CFR Subpart C 42 USC 7408-7409
Construction and operation in Lincoln County	Special Use Permit	Lincoln County Board of Commissioners	Lincoln County Zoning Ordinance
Construction and operation in Nye County	Special Use Permit	Nye County Board of Commissioners	Nye County Zoning Ordinance
Construction and operation in White Pine County	Special Use Permit or Zoning Change	White Pine County Board of Commissioners City of Ely	White Pine County Code, Title 17
Construction in White Pine County	Building Permit	White Pine County	White Pine County Code

1.10 Summary of Public Scoping and Issue Identification

1.10.1 Public Scoping and Issues

The issues evaluated in this FEIS are derived from public comments originally made during the EEC Project scoping period and summarized in the EEC EIS Scoping Summary issued in April 2007 (BLM-JBR 2007). In that document, the comments received during scoping from agencies and the public were summarized into categories, which became the basis for defining issues and indicators. The defined issues are presented here in categories that are customarily used in impact analysis, along with the section of the FEIS that addresses that particular issue. During the public comment period for the EEC DEIS, NV Energy changed the Proposed Action from the EEC Project to a reduced subset of that project - proposed now as the ON Line Project. The comments received on the EEC DEIS were reviewed to identify comments pertinent to this ON Line Project FEIS and those comments have been reviewed as additional scoping input during development of this FEIS. In addition, a Notice of Intent (NOI) to prepare a Supplemental EIS for the ON Line Project was published in the Federal Register on July 29, 2009 (Vol. 74, No. 144, Pg. 37728). Although no additional public scoping meetings were held for the ON Line Project, the public comments received during the 30-day scoping period, initiated by the NOI, were also fully reviewed and considered and are included, as applicable, in the issues identified below. The issues presented here are those related to the construction, operation, and maintenance of the electrical and communication facilities as described in **Section 1.4**.

Additional information on the scoping process is provided in **Section 6.1**.

1.10.2 Issues Raised During Scoping

Air Resources

- Construction and operation of the project may increase air borne pollutants and negatively affect human health, local economies, wildlife, and special status species. (**Section 4.6**)
- Construction of the project may impact regional air quality in the Great Basin. (**Section 4.6**)
- Construction, operation, and maintenance of the project may contribute to greenhouse gas emissions. (**Section 4.6**)

Cultural Resources

- Cultural resource sites, historic properties, historic buildings, and heritage values may be impacted (directly and/or indirectly) in the project area. (**Section 4.10**)

Cumulative Effects

- The cumulative impacts of the project need to be disclosed. (**Chapter 5**)

Environmental Justice

- Environmental justice considerations need to be addressed in the EIS. (**Section 4.18**)

Geology

- The project may affect locatable and saleable mineral deposits and operations, and oil & gas and geothermal leases. (**Section 4.3**)

Hazardous Materials and Solid Wastes

- Construction of the project may release hazardous compounds into the air, water, and soil that may affect human and environmental health. (**Sections 4.6 and 4.19**)

Land Use and Access

- The project could negatively impact the limited amount of private property available in the area. (**Section 4.12**)
- The project may change the rural character of the area and the traditional and historic land use patterns. (**Section 4.12**)
- Additional roads/access created by the project may increase recreational access and risk of fire and weed invasion. (**Sections 4.7, 4.12, and 4.14**)
- Transmission towers and electromagnetic emissions may pose a hazard to low flying military aircraft in the Low Altitude Tactical Navigation Area. (**Sections 2.2.2**, **4.12.4**, and **4.20**)

Native American Concerns

- Construction and operation of the project may impact Native American Tribes in the area. (**Section 4.11**)
- The project may impact Indian Trust Assets. (**Section 4.11**)
- The project may impact Native American sites, use areas, and associated resources. (**Section 4.11**)

Noise

- Construction may cause noise impacts on surrounding areas. (**Section 4.16**)

Paleontology

- No issues were identified in the public scoping process regarding paleontology. However, potential impacts to paleontological resources are addressed in **Section 4.4**.

Public Health and Safety

- Air pollution may cause health problems for people in surrounding communities and distant locations. (**Section 4.6**)
- Project components greater than 150 feet in height may present aviation hazards. (**Section 2.2.2**)

Range Resources

- The project may cause health and safety impacts to livestock. (**Section 4.9**)
- Grazing allotments may be degraded and will be fragmented by project construction activities. (**Section 4.9**)

Recreation

- The area may be less desirable for outdoor recreation and tourism. (**Section 4.14**)
- Short-term residents, such as construction workers, may have little concern or value for public lands and sensitive areas. (**Section 4.14**)

Socioeconomic Resources

- The project may impact socioeconomic conditions of local communities. (**Section 4.17**)
- The project may cause a utility rate increase. (**Section 4.17**)
- Integrating the northern and southern power systems may have negative impacts on the northern system and its users. (**Section 4.17**)

Soils

- The project may increase soil erosion. (**Section 4.5**)

Special Designations and Sensitive Areas

- The ecological integrity, scenic quality, and pristine characteristics of nearby wildernesses, national parks, national forests, national wildlife refuges, wildlife management areas, and areas of critical environmental concern may be negatively affected by the project. (**Section 4.13**)

Special Status Species

- The project may negatively affect the life cycle and habitat of species identified by state or federal agencies as threatened, endangered, or sensitive. (**Sections 4.7 and 4.8**)
- The project may increase predation on special status species by raptors and ravens. (**Section 4.8**)

Transportation

- Increased traffic increases wear and tear on roads which may need more maintenance, upgrades, and improvements. (**Section 4.20**)
- The project could create hazardous conditions for local air traffic. (**Section 4.20**)

Vegetation

- Surface disturbance and air pollution from the project may negatively affect wetland, riparian, and upland vegetation communities. (**Section 4.7**)
- Surface disturbance and ongoing operation/maintenance activities would increase the spread of invasive and non-native plants. (**Section 4.7**)

Visual and Aesthetic Resources

- The project may impact the existing visual quality of the area. (**Section 4.15**)

Water Resources

- The project may negatively impact water quality. (**Section 4.2**)
- The project may impact Waters of the U.S. (**Section 4.2**)

Wild Horses and Burros

- The project may negatively affect Wild Horse/Burro populations. (**Section 4.9**)

Wildlife Resources

- The construction and operation of the project may directly or indirectly impact wildlife through direct disturbance, habitat fragmentation, or air pollution. (**Section 4.8**)
- The construction and operation of the project may impact game species and wildlife populations and indirectly affect hunting, fishing, and wildlife watching activities. (**Section 4.8**)
- The construction and operation of the project may impact migratory birds. (**Section 4.8**)

Chapter 2

Proposed Action and Alternatives

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Chapter 2
Proposed Action and Alternatives

2.1 Introduction

This chapter of the FEIS fully describes: (1) the Proposed Action Alternative to construct and operate a 500 kV transmission line, 500/345 kV substation, and associated facilities, and (2) an Action Alternative, including various sub-alternatives, to build the same facilities at an alternative center line location in the same federal energy corridor as the Proposed Action, and (3) the No Action Alternative.

Alternatives considered in this FEIS are based on issues identified by the BLM and cooperating agencies as well as comments received during the public comment process for the Draft EEC EIS and the comment period for the Draft ON Line SEIS. The BLM is required to consider in detail a range of alternatives that are considered "reasonable," usually defined as alternatives that are realistic (not speculative), technologically and economically feasible, and that respond to the purpose of and need for the project.

The Proposed Action would consist of a new substation at Robinson Summit and transmission line and telecommunication facilities that were described and analyzed in the EEC DEIS (i.e., Robinson Summit to Harry Allen (RS-HA) Line #1), as well as an expansion of the existing Falcon Substation on private lands. The Proposed Action transmission line and associated facilities would be located mainly within the Southwest Intertie Project (SWIP) Utility Corridor. The Action Alternative to this line would consist of the former EEC Project RS-HA Line #2, which is also located in the SWIP Utility Corridor but along a different center line location than the Proposed Action, approximately 1,800 feet to the east. The facilities and alignment described under the Action Alternative were also described and analyzed in the EEC DEIS (i.e., RS-HA Line #2).

The long-term ROW needed for the transmission facilities would vary slightly in acreage depending on the alternative below. **Table 2.1-1** provides a description of each transmission line route for a better understanding of the transmission line segment labeling. The Proposed Action and Action Alternative routes (including alternative components) are shown on **Figures 2.2-1a** and **2.2.-1b**.

TABLE 2.1-1 TRANSMISSION LINE COMPONENTS

LINE NAME	DESCRIPTION	SEGMENTS INCLUDED
Proposed Action (formerly EEC RS-HA Line #1)	Robinson Summit 500/345 kV Substation (RSS), 500 kV transmission line and telecommunication facilities mostly within the SWIP Utility Corridor between the RSS and the existing Harry Allen Substation, loop-in of existing Falcon–Gonder 345 kV line at RSS, 345 kV equipment additions at the existing Falcon Substation, and 500 kV equipment additions at Harry Allen Substation.	6C, 8, 9B, 9A, 9D, and 11
Action Alternative (formerly EEC RS-HA Line #2)	The Action Alternative would consist of all of the same facilities as the Proposed Action but would be an alternate alignment location, about 1,800 feet to the east, also mostly within the SWIP Utility Corridor between the RSS and the Harry Allen Substation. Additionally, an alternate location for the proposed RSS would be a sub-alternative.	6C, 8, 9B, 9C, 9D, and 11 9A (sub-alternative) instead of 9C 10 (sub-alternative) instead of 9B, 9C, and 9D RSS-Site B (sub-alternative) instead of RSS

This chapter includes the following:

- **Section 2.2** provides a detailed description of the Proposed Action.
- **Section 2.3** provides a discussion of the Action Alternative at an alternative center line location together with the various component sub-alternatives associated with the overall alternative.
- **Section 2.4** discusses the No Action Alternative and assumes there would be no development of the Proposed Action or Action Alternative and it also serves as the baseline for environmental conditions.
- **Section 2.5** provides descriptions of alternatives that were considered but eliminated from detailed analysis.
- **Section 2.6** summarizes and compares the analyzed alternatives.
- **Section 2.7** provides a summary of the mitigation and monitoring for the action alternatives.

2.1.1 Description of BLM Actions

2.1.1.1 Issuance of ROWs

A long-term ROW issued for 50 years with the option of renewal would be necessary for the operation and maintenance of facilities located on BLM-managed public land. In addition, a short-term ROW would be required from the BLM to accommodate temporary construction activities, such as access roads and material/equipment staging. A long-term ROW would be issued for:

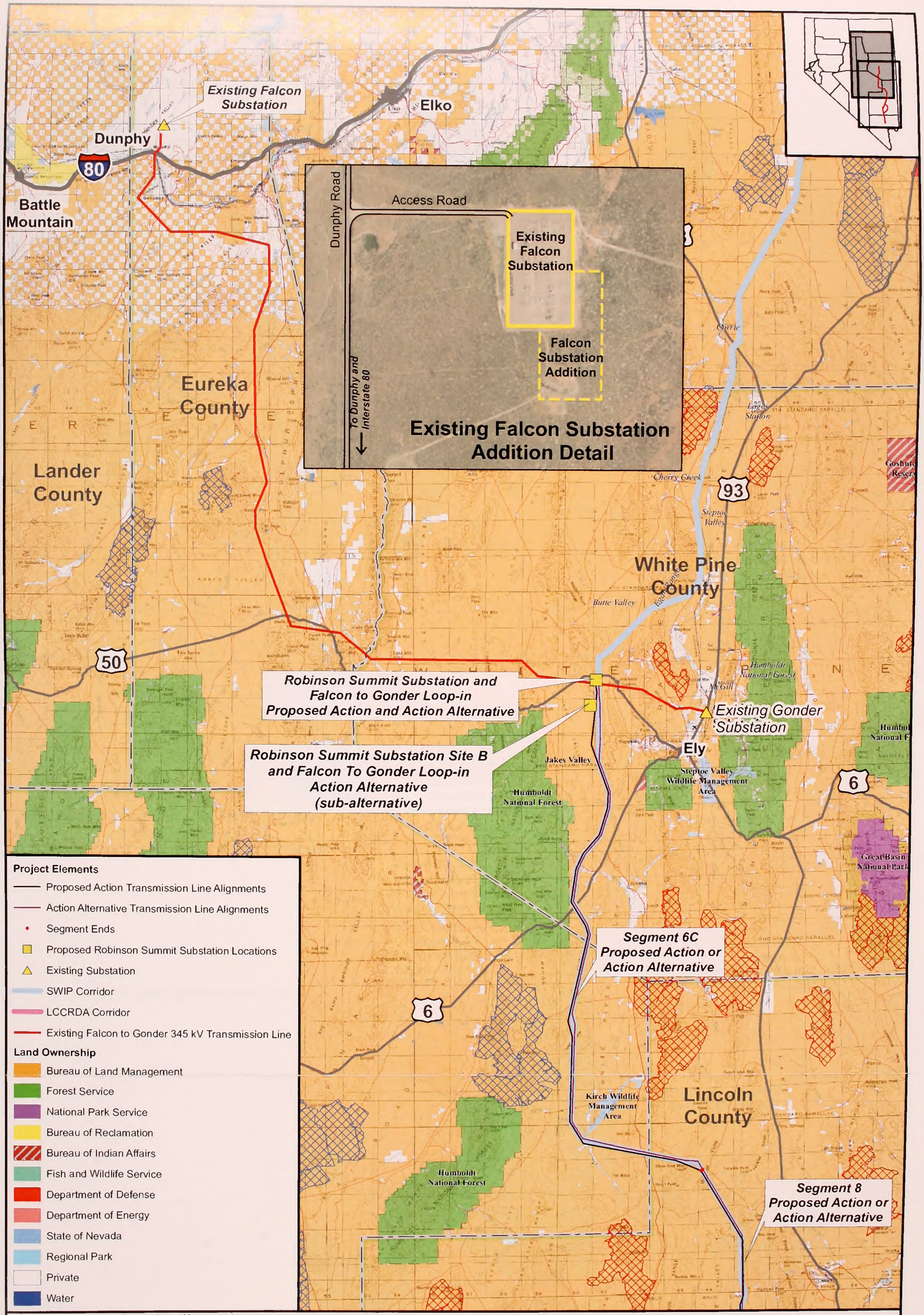
- Robinson Summit Substation and Telecommunication – Construction and operation of a new 500/345 kV substation and access road. The substation would service the proposed 500 kV transmission line and the loop-in with the existing Falcon-Gonder 345 kV transmission line, as well as include microwave and fiber optic facilities to provide redundant communication pathways within NV Energy's system. This substation would require approximately 108 acres to interconnect the 500 kV and 345 kV systems and 4 acres for an access road to be widened and upgraded.
- Electric Transmission and Telecommunications Facilities - Construction and operation of an electric transmission line, telecommunication (i.e., fiber optic line), and associated facilities to interconnect the existing and planned transmission and telecommunication facilities including substations, fiber optic line (including regeneration stations), and transmission lines.

In addition, an amendment to the existing Falcon-Gonder 345 kV transmission line ROW would be required for the Falcon-Gonder Loop-in.

2.2 ON Line Project – Proposed Action

2.2.1 Electric Transmission Facilities

To connect the northern and southern NV Energy service territories, and to allow for the delivery of renewable resources to market, NV Energy proposes to build approximately 236 miles of transmission line and associated facilities mostly within the SWIP Utility Corridor (**Figures 2.2-1a** and **b**).



Source - Land Ownership: Bureau of Land Management
Base Map: USGS topographic map of Nevada (scanned from paper copy and georeferenced by R. Hess, University of Nevada Reno).

1:960,000
10 0 40 Miles
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Scale is 1:1,440,000 when printed at 11"x17"

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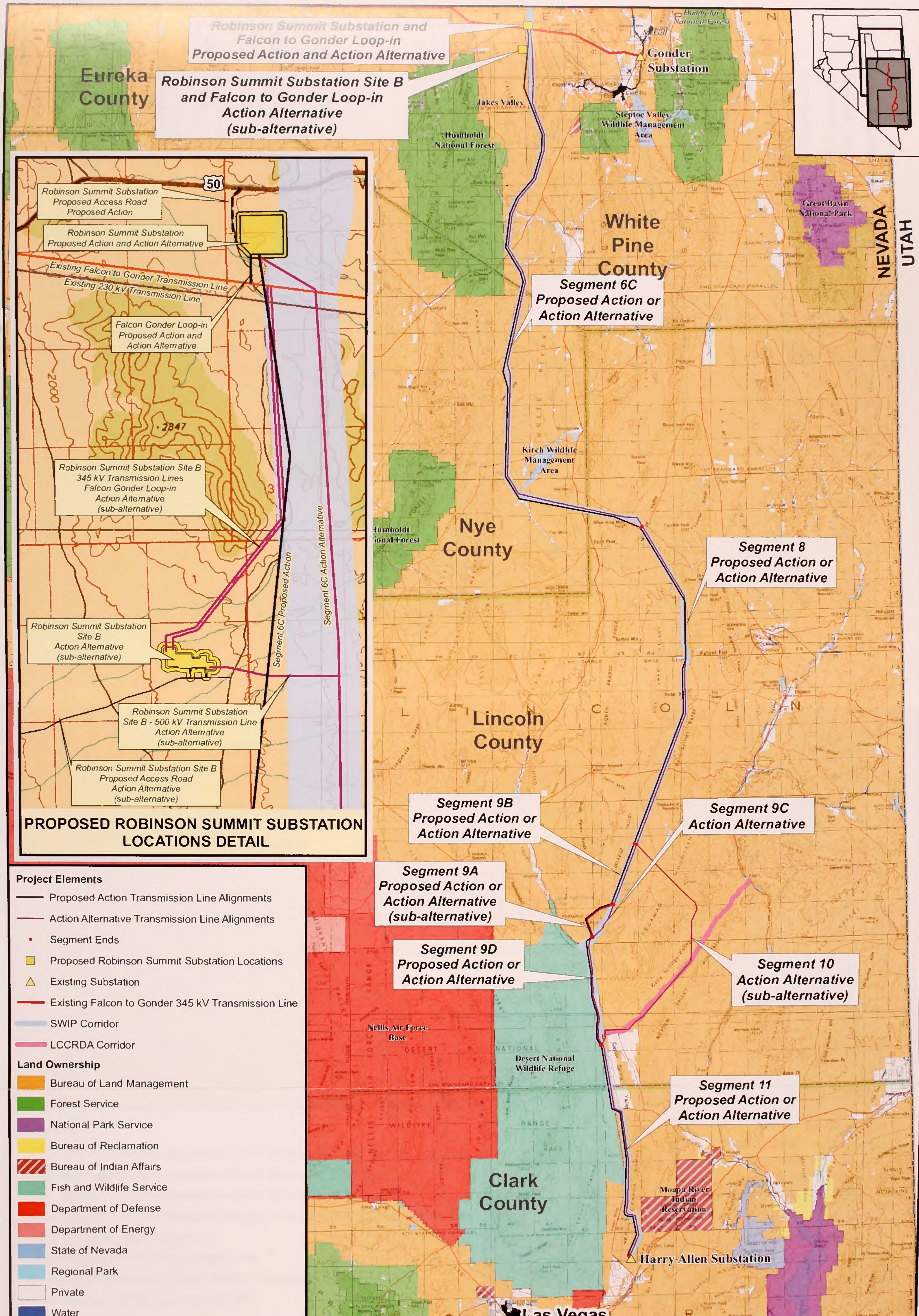
FIGURE 2.2-1a
PROJECT ELEMENTS
ON LINE PROJECT



Source - Land Ownership: Bureau of Land Management
Base Map: USGS topographic map of Nevada (scanned from paper copy and georeferenced by R. Hess, University of Nevada Reno).

FIGURE 2.2-1b
PROJECT ELEMENTS
ON LINE PROJECT

Specifically, the components of the electric transmission facilities would include:

- Robinson Summit 500/345 kV Substation, approximately 108 acres in size, adjacent to the SWIP Utility Corridor in White Pine County
- One Nevada 500 kV transmission line and telecommunication appurtenances (ON Line), approximately 236 miles in length, between the proposed Robinson Summit Substation and the existing Harry Allen Substation in Clark County
- Falcon-Gonder 345 kV transmission line loop-in at the Robinson Summit 500/345 kV Substation
- Access roads into the Robinson Summit Substation and along the transmission lines
- Expansion to add 345 kV series compensation equipment on private property at the existing Falcon Substation in Eureka County
- Addition of 500 kV electrical connection equipment within the existing footprint of the Harry Allen Substation in Clark County

2.2.1.1 Transmission System Design

The design, construction, operation, and maintenance of the transmission system would meet or exceed the requirements of the National Electrical Safety Code (NESC), U.S. Department of Labor, Occupational Safety and Health Standards, and NV Energy's requirements for safety and protection of landowners and their property. The electrical characteristics for the proposed transmission line facilities are summarized in **Table 2.2-1**.

TABLE 2.2-1 ELECTRICAL DESIGN CHARACTERISTICS OF THE TRANSMISSION LINE

FEATURE	DESCRIPTION
Line Length	Approximately 236 miles
Type of Structures	Galvanized, painted, or self-weathering Steel: Lattice Guyed-V Lattice Self Supporting Tubular H-frame Tubular Three-Pole (Line Angle and In-line Dead End Structures in Tubular H-frame sections only)
Structure Height	Single-circuit structures 100 to 185 feet
Span Length	Average span 900 to 1,600 feet
Number of Structures per Mile	4 to 6
Right-of-way width	200 feet
ELECTRICAL PROPERTIES	
Nominal Voltage	525,000 volts Alternating Current
Capacity	2,000 Megawatts
Circuit Configuration	Single-circuit with three phases; three conductors per phase
Conductor Size	1,590 kcmil Aluminum Conductor Steel Reinforced (ACSR), 1.5 inch diameter per conductor
Shield Wire Size	7/16" diameter steel or approximately 0.9" diameter fiber optic cable
Ground Clearance of Conductor	Designed to exceed the code minimum requirement at the maximum operating temperature, lowest requirement is 25.8 feet

Four main types of structures would be used for the transmission line, they include steel tubular guyed-V, steel tubular H-frame and three-pole, steel lattice guyed-V, and steel lattice self-supporting. Steel tubular guyed-V structures require one foundation and four anchors per structure (**Figure 2.2-2a**). Steel lattice guyed-V structures require one foundation and four anchors per structure (**Figure 2.2-2b**). Steel lattice self-supporting structures require four foundations per structure (**Figures 2.2-2c** to **e**). Steel tubular H-frame structures require two foundations per structure (**Figure 2.2-2f**), and when required at angle and dead-end locations, steel tubular three-pole structures would require three foundations and up to twelve anchors per structure. A majority of the guyed-V foundations would be precast at an offsite concrete manufacturing facility and then transported and buried approximately five feet deep at each structure location. All other structure foundations would be constructed of cast-in-place concrete and range from 3 to 8 feet in diameter and from 12 to 30 feet deep. Depending upon soil type and engineering strength requirements, anchors would be drilled and grouted in small diameter holes (less than 1-foot in diameter) up to 40 feet deep, or installed in minimum 4-foot diameter excavations ranging from 12 to 20 feet deep.

2.2.1.2 Elements and ROWs

The transmission facilities would consist of an overhead 500-kV transmission line, a new substation, an expansion of an existing substation, an interconnection to an existing substation and new telecommunications facilities to support the transmission facilities (see **Figures 2.2-1a** and **b**). **Tables 2.2-2** and **2.2.-3** summarize acreages associated with short-term and long-term acreages and ROW requirements.

Great Basin Transmission LLC (GBT) has an existing 50-year ROW authorization for a 500 kV line within the SWIP Utility Corridor. NV Energy would work cooperatively to address all line separation and crossing requirements for the ON Line Project. Under the Proposed Action, the separation between the ON Line Project and GBT's lines would be about 1,600 feet.

500 kV Transmission Line from the Robinson Summit Substation to the Harry Allen Substation

One new 500 kV transmission line would be constructed from the proposed Robinson Summit Substation in White Pine County, Nevada to the existing Harry Allen Substation in Clark County, Nevada, to provide an electric transmission connection between northern and southern Nevada. It is proposed that the transmission line would be routed primarily within the SWIP Utility Corridor.

The transmission line would extend south from the Robinson Summit Substation via Segments 6C, 8, 9B, 9A, 9D, and 11 (**Figure 2.2-1b**). This line would deviate slightly from the SWIP Utility Corridor to connect to the Robinson Summit Substation. It would also deviate from the SWIP Utility Corridor in Jakes Valley, near the Cove in the White River Valley, near the crossing of the White River by the southern extent of the Kirch Wildlife Management Area, and near Silver King Pass all along Segment 6C, and again at Segment 9A south of Delamar Valley. These deviations primarily result from topographic constraints within the SWIP Utility Corridor. If the line was left at the standard construction line spacing in comparison to the other planned utilities within the SWIP Utility Corridor, environmental impacts and safety risks to construction personnel and equipment would increase due to the difficulty of construction activities in steep terrain and the amount of surface disturbance required for safe installation of the transmission line. The slight deviations from the standard location in the SWIP Utility Corridor mentioned above would reduce these impacts.

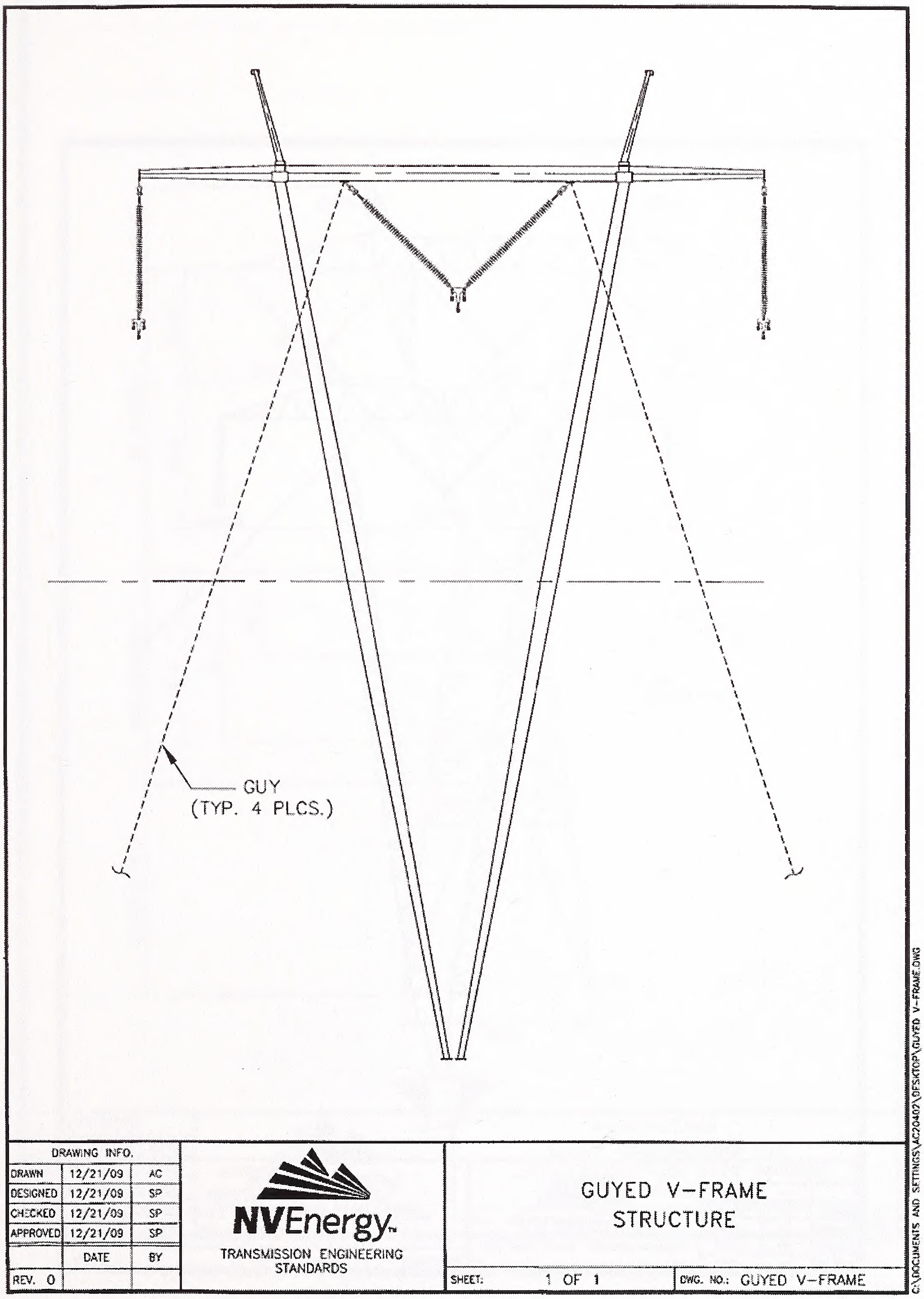


Figure 2.2-2a Steel Tubular Guyed V Structure

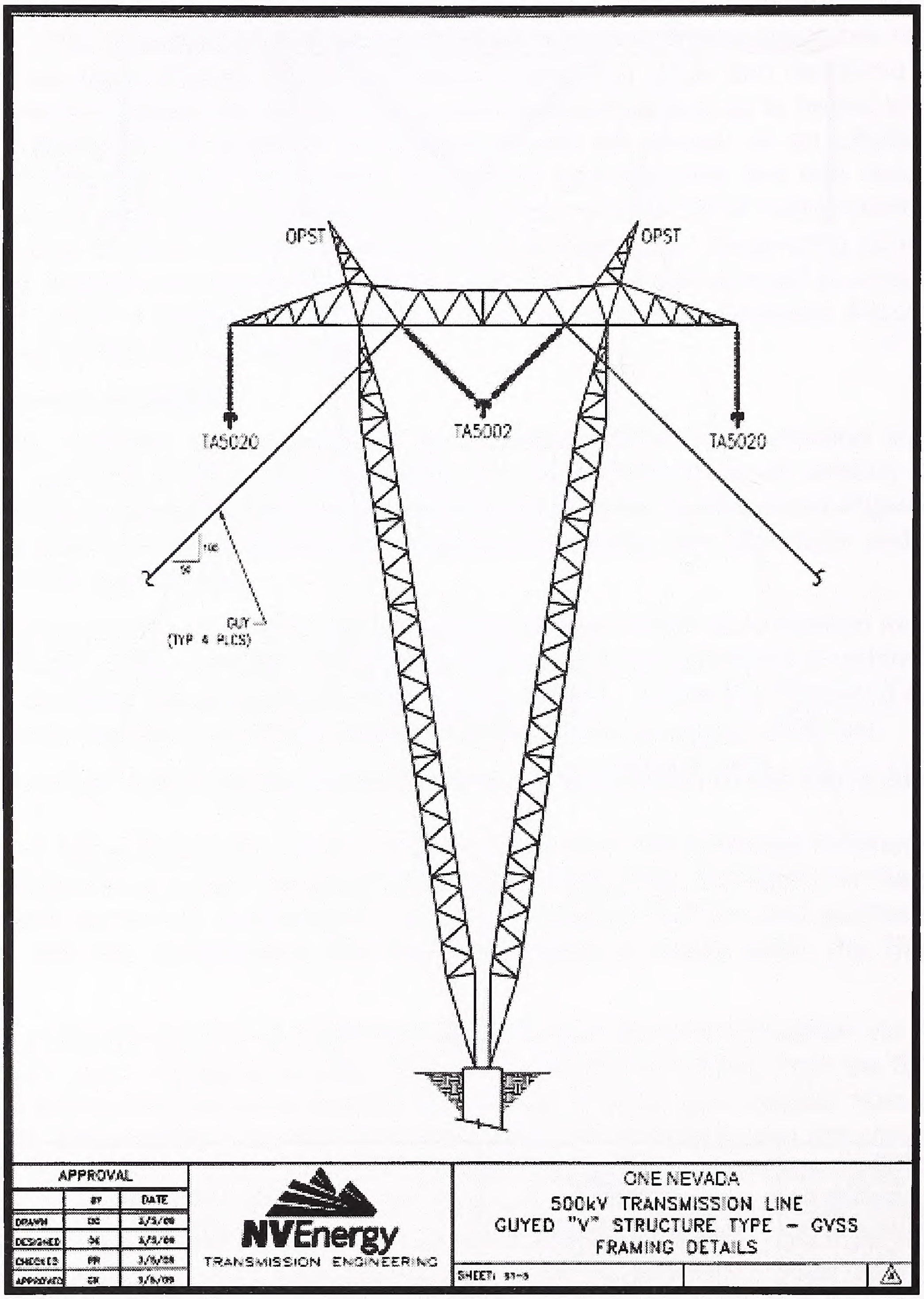


Figure 2.2-2b Steel Lattice Guyed V Structure

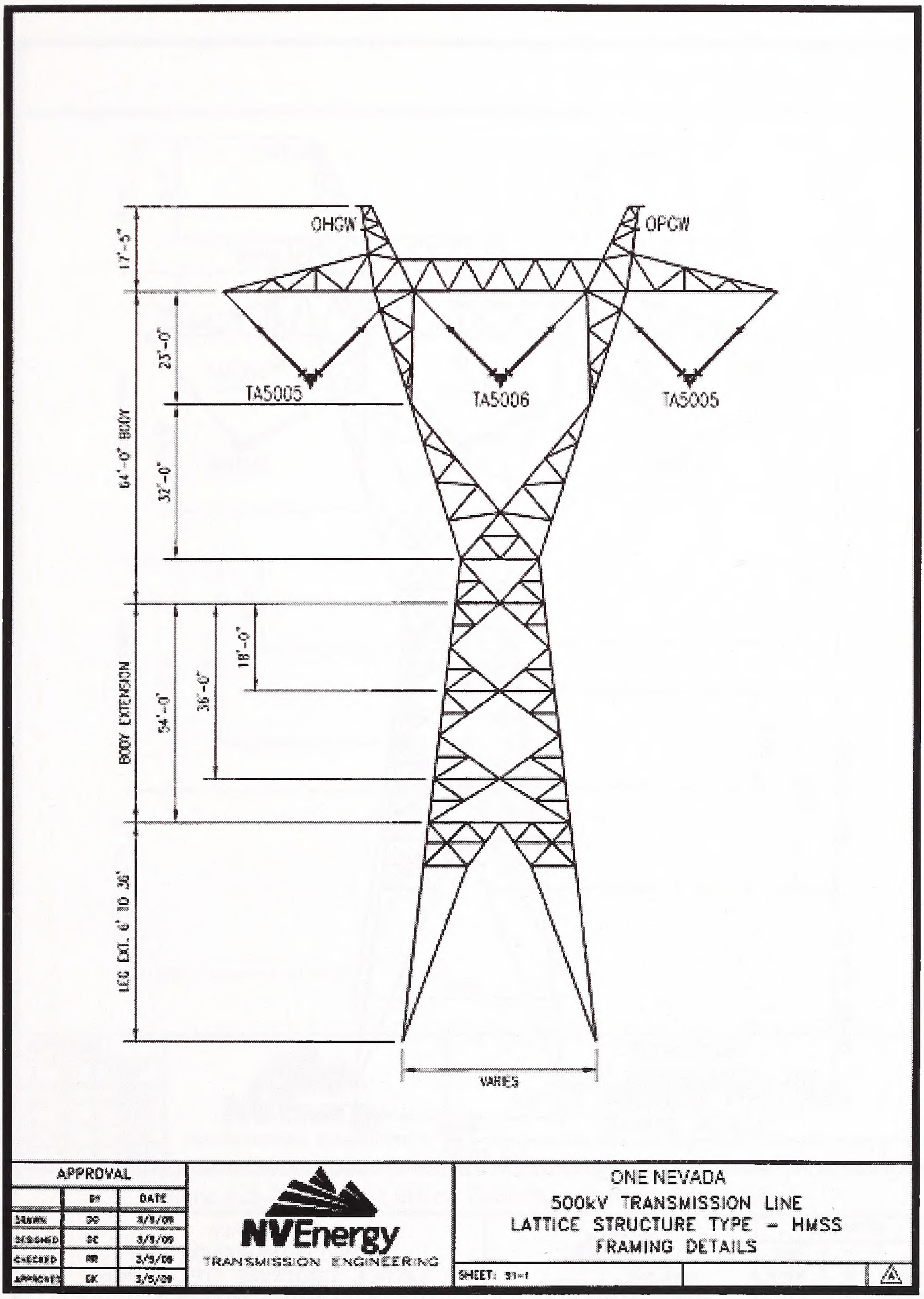


Figure 2.2-2c Steel Lattice Self-Supporting Structure

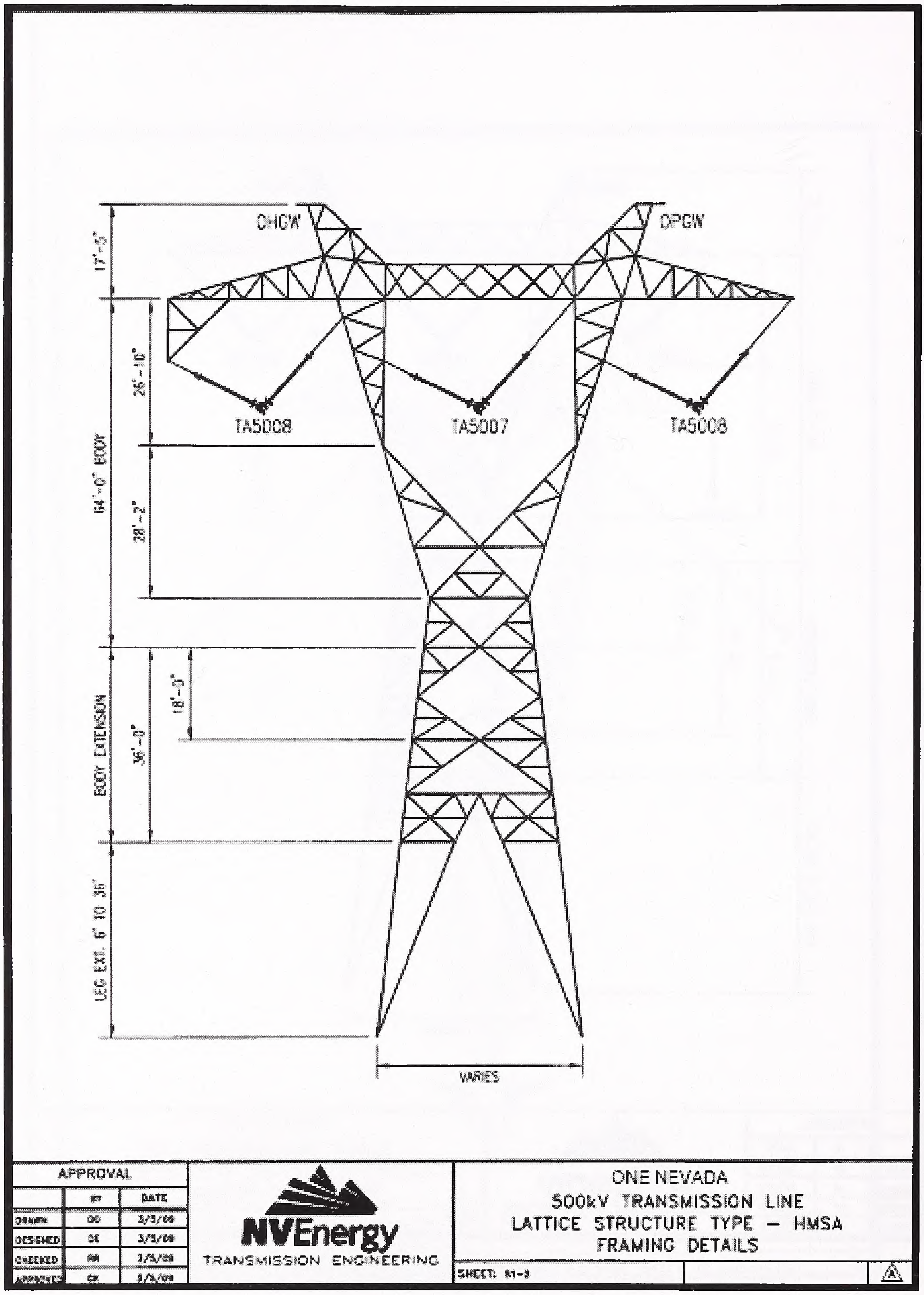


Figure 2.2-2d Steel Lattice Self-Supporting Structure

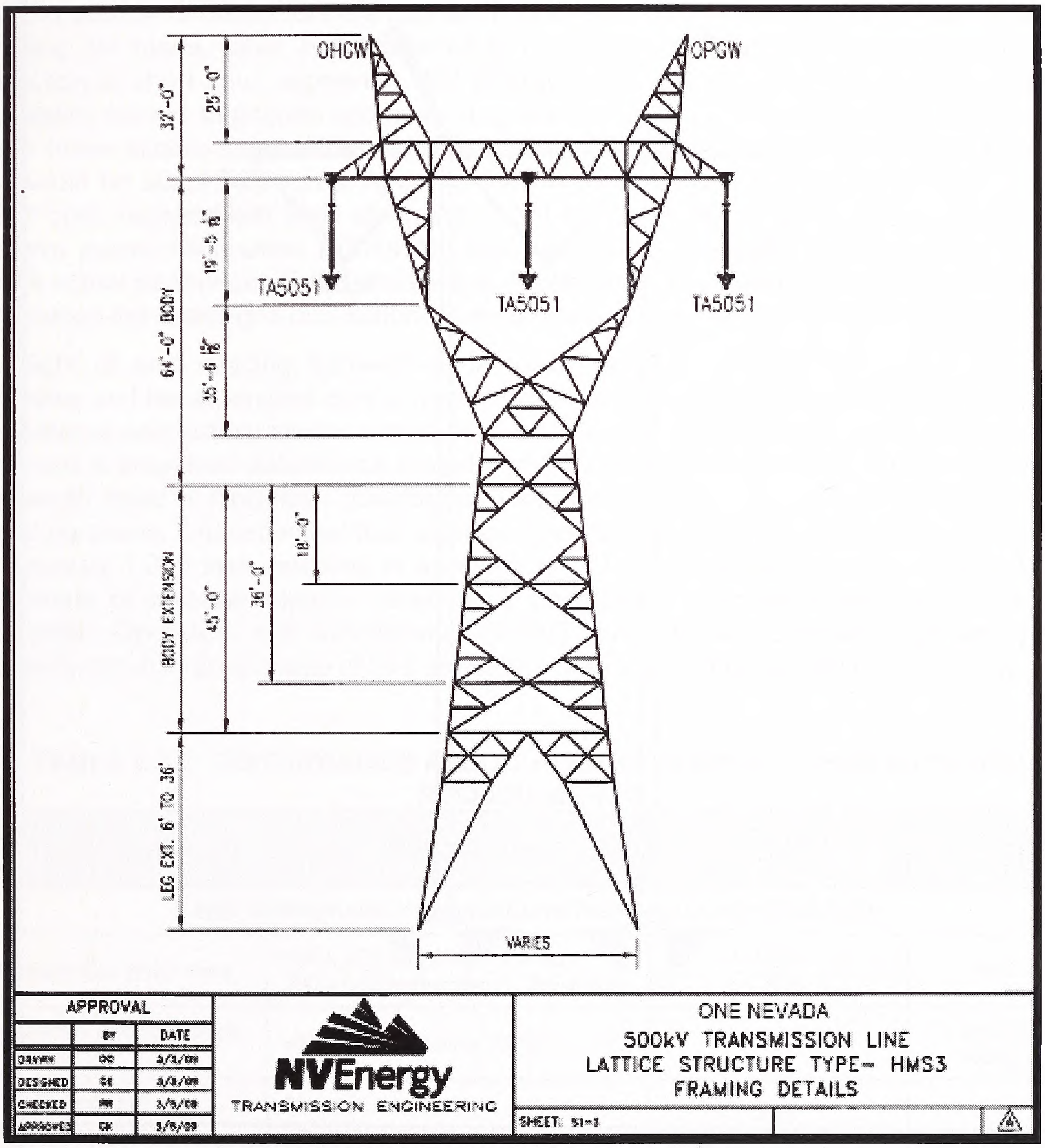


Figure 2.2-2e Steel Lattice Self-Supporting Structure

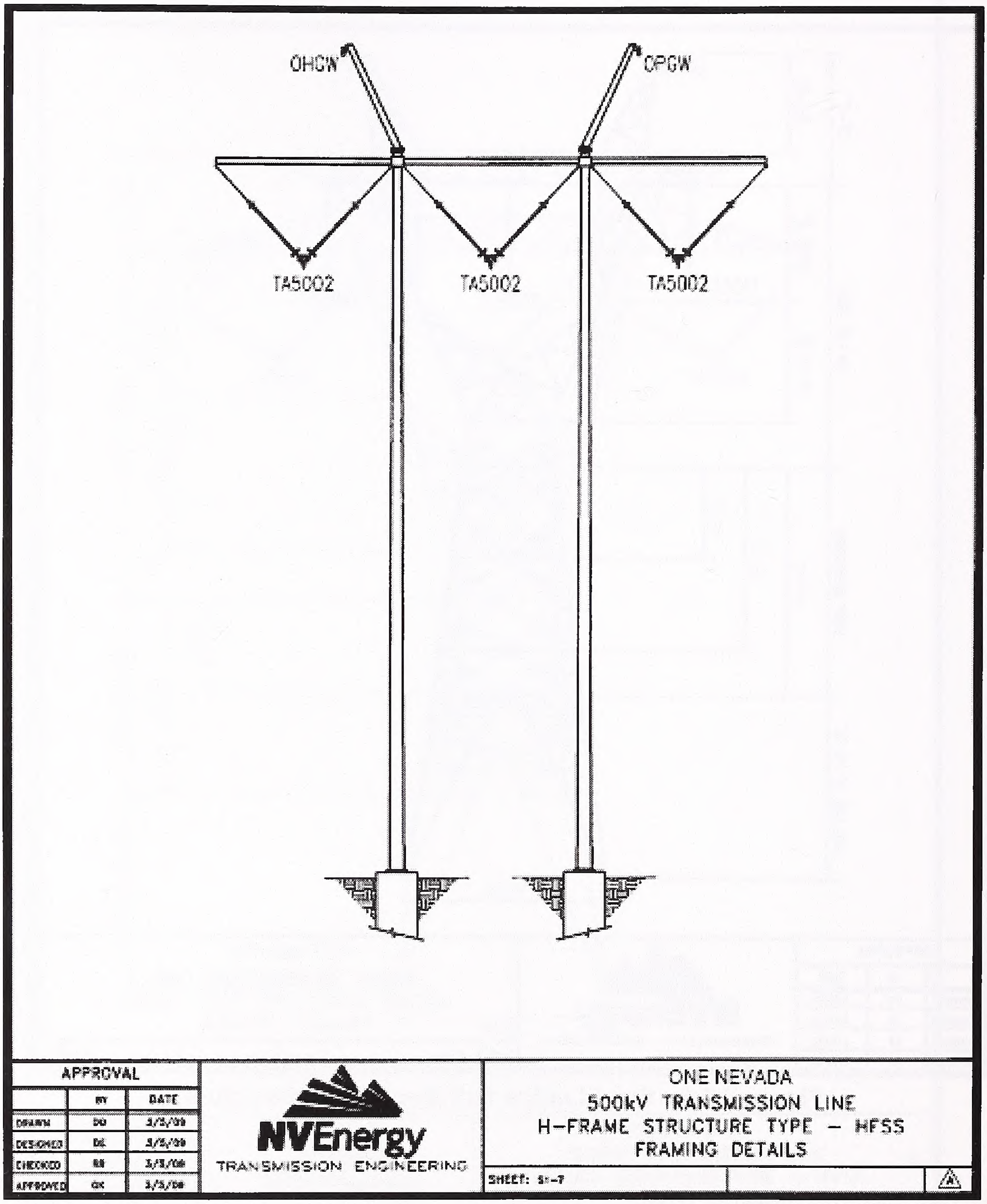


Figure 2.2-2f Steel Tubular H-Frame Structure

The long-term ROW would be 200 feet wide from end point to end point (236 miles) for a total area of 5,721 acres. An additional short-term construction ROW would include approximately 216 miles of dirt access roads (average width of 20 feet) outside the transmission line long-term ROW and outside of desert tortoise habitat. This short-term ROW would authorize the widening of existing dirt roads, other improvements to accommodate the construction equipment, and construction of short spur segments. NV Energy would coordinate with responsible agencies and property owners to acquire approvals (e.g. short-term ROWs) to use and, in some cases, to improve these access roads. At an average width of 20 feet wide, this short-term construction ROW would be about 523 acres. Approximately 4 acres of long-term ROW would be required for fiber optic regeneration sites along the ROW (40 acres for short-term construction ROW). Long-term power distribution ROWs for fiber optic sites would be approximately 60 acres, although actual permanent disturbance within the ROW for structures would be less than 1 acre. Transmission tower designs and footprints would be the same as above (see **Figures 2.2-2a-e**).

The height of and spacing between each tower would be determined based on detailed engineering and be dependent on the type of tower used and the terrain. Typically, single-circuit steel H-frame and lattice towers would both be 100-185 feet tall. On flat terrain each tower would have a long-term disturbance footprint of 66 x 66 feet (0.1 acres). In rough terrain each tower would have a long-term disturbance footprint of 200 x 220 feet (1 acre). For impact analysis purposes, it is estimated that average span lengths between structures would measure approximately 1,050 feet, resulting in an average of five structures per mile. This is likely an overestimate of acreage impacts based upon preliminary information being prepared for the Construction, Operation, and Maintenance (COM) Plan, as more detailed engineering design would likely result in an average of four structures per mile for the majority of the project.

TABLE 2.2-2 DISTURBANCE ASSOCIATED WITH SHORT-TERM LAND USE REQUIREMENTS

FEATURE	DESCRIPTION	ACREAGE (approximate)	ESTIMATED NUMBER
LAND TEMPORARILY REQUIRED WITHIN THE LONG-TERM ROW			
Structure Site Work Area	200 x 220 feet (flat) - 1.0 acre 200 x 440 feet (rough) - 2.0 acres	513* 374	887
Temporary Access Roads in the ROW	within 200-foot wide ROW	487	Centerline Access
Wire-Pulling and Tensioning Sites	At angle structures 5.4 acres per site	433	80
Wire-Splicing Sites	200 x 100 feet - 0.5 acre (site on average every 3 miles)	39	79
Guard Structures	200 x 100 feet - 0.5 acre	Unknown	unknown
Construction Staging Areas on the ROW	within 200-foot wide ROW, typically within wire-pulling and tensioning and /or wire-splicing sites	see wire-pulling above	see wire-pulling above

FEATURE	DESCRIPTION	ACREAGE (approximate)	ESTIMATED NUMBER
LAND TEMPORARILY REQUIRED OUTSIDE THE LONG-TERM ROW			
Short-term construction Area surrounding Robinson Summit Substation	200-foot buffer around expansion area	41	N/A
Short-term Access Roads outside the ROW	Access roads needing improvement and construction of short spur roads for access - maximum 20-feet wide	523	216 miles
Construction/Material Yards	Locations described below under Construction/Materials Yards - 40 acres each - on private land or within short-term ROW	120	3
Concrete Batch Plant Sites	Locations unknown at this time - 5 to 40 acres each (to be situated on private land)	25 to 200	approx. 5

*Includes structure sites within all suitable desert tortoise habitat that would be permanent disturbance.

TABLE 2.2-3 LONG-TERM LAND USE REQUIREMENTS

FEATURE	DESCRIPTION	ACREAGE (approximate)	ESTIMATED NUMBER
Robinson Summit Substation ROW, plus access road	Substation footprint and access road (approx. 50-feet wide by 0.5 miles long)	112	N/A
Transmission Line /Fiber Optic Line ROW	200-foot wide by 236 miles	5,721	N/A
Structure Base	66 x 66 feet (flat) - 0.1 acre 200 x 240 feet (rough) - 1.0 acres	51 408	884
Long-term Access Roads (includes improvements to existing access, centerline access, and spur roads)	Only needed within desert tortoise habitat (20-feet wide)	218	N/A
Regeneration Stations	Less than 1 acre per site for equipment enclosure, fenced area, and primary and backup power supplies approximately every 40 to 60 miles	4	4

Minimum conductor height above the ground for the 500 kV line would comply with NESC and NV Energy standards. The exact height of each structure would be governed by topography and requirements for conductor clearance.

Single-circuit tangent structures would have one cross arm with two “I” string and one “V” string insulator assemblies, or three “V” string insulator assemblies suspended from the cross arm. Single-circuit dead-end structures would have six horizontal insulator assemblies installed in

tension with the conductor on each side of the cross arm and three "I" or "V" string assemblies suspended from the cross arm to support jumper connectors.

Overhead shield wires or steel encased fiber optic cables are required to protect the 500 kV transmission line from lightning. Two overhead shield wires, either 7/16-inch diameter stranded steel cable or approximate 9/10-inch diameter fiber optic cable, would be installed on the top of all structures. Current from lightning strikes would be transferred through the shield wires and structures into the ground via buried ground rods, counterpoise, or another type of grounding system.

Telecommunications Facilities

Fiber optic communications cables would be installed within one or both of the shield wires along the transmission line. These cables would be supported by the transmission structures and strung along with the transmission cables during construction.

Fiber optic regeneration stations require an equipment enclosure, fenced area, and primary and backup power supplies approximately every 40 to 60 miles generally within the 200-foot transmission line ROW to transmit the signals over long distances. Fiber optic regeneration stations would be less than 1 acre in size. New electric power distribution would be required for the fiber optic regeneration stations. Electric power distribution locations for these sites would be selected based on availability from the local providers.

Structure Site Work Areas in the Long-Term ROW

An area of about 200 by 220 feet (approximately 1 acre) would be required at each structure site for the construction of foundations and the assembly and erection of the structures. Where topography requires, work areas would be expanded to up to 200 by 440 feet (approximately 2 acres). These expanded work areas for rough terrain would be partially cleared and graded to accommodate the safe operation of heavy equipment and cranes. The actual work area may not always be centered on the structure but may be positioned ahead or back along the long-term ROW as the terrain dictates to maximize access and minimize grading.

Temporary Access Roads in the Long-Term ROW

Temporary access roads (outside all suitable desert tortoise habitat) would include: a temporary centerline access road, utilization of existing roads without improvements, utilization of existing roads with improvements, or the creation of new roads in the long-term ROW as required to access all structure sites, wire pulling and tensioning sites, wire splicing sites, guard structures, fiber optic regeneration sites, etc. Temporary access roads would originate from existing public access roads and provide connection to construction areas and the centerline access road. Utilization of existing roads including any required improvements would be described in detail in the final COM Plan.

Temporary Wire-Pulling and Tensioning Sites in the Long-Term ROW

At each angle point along the transmission line, temporary wire-pulling and tensioning sites would be needed, measuring approximately 5.4 acres each. These temporary areas may extend outside the long-term ROW at certain angle points and therefore be included within the short-term ROW.

Temporary Wire Splicing Sites in the Long-Term ROW

Temporary wire splicing sites would be about 200 feet by 100 feet (approximately 0.5 acre) in size, every 2 to 4 miles along the ROW, or as may be required.

Temporary Guard Structures in the Long-Term ROW

Temporary guard structure sites would be about 200 by 100 feet (approximately 0.5 acre) adjacent to existing roads/electrical lines or other facilities requiring protection during wire pulling.

Temporary Construction Staging Areas in the Long-Term ROW

Temporary construction staging areas in the long-term ROW would generally be located at areas designated for pulling and tensioning sites or at designated splice sites. In some cases temporary construction staging areas could act as construction yards, helicopter fly yards, concrete batch plants, or accommodate other construction requirements.

Temporary Access Roads outside the Long-Term ROW

Temporary access roads (outside all suitable desert tortoise habitat) would involve utilization of existing roads without improvements where possible, utilization of existing roads with improvements as necessary, or the creation of new roads outside the long-term ROW as required to access the temporary centerline access road, all structure sites, wire pulling and tensioning sites, wire splicing sites, guard structures, etc. Temporary access roads would originate from existing public access roads and provide connection to construction areas and a centerline access road. Utilization of existing roads, including descriptions of any required improvements, would be described in detail in the COM Plan.

Temporary Construction/Material Yards outside the Long-Term ROW

Three temporary construction yards have been identified for the project, located outside the long-term ROW: 1) on private property within an existing gravel yard in Ely; 2) on private property in Caliente; and 3) on BLM land authorized for use by NV Energy at its existing Crystal Substation (N-61363) in Clark County. Construction yards would receive and store equipment, materials, and could provide an area for temporary office space to administer construction. The yards would be used to receive and issue substation, transmission line, and fiber optic line materials as necessary for construction of the project facilities. These sites would be returned as close as possible to their original condition after use.

Temporary Concrete Batch Plant Sites

Concrete batch plant sites would generally be located outside the long-term ROW on private land at locations with good access to the public road system. Concrete batch plant sites would store concrete materials, concrete batching facilities, concrete transportation equipment, and could also act as construction yards. In general, concrete construction crews would report to the batch plant sites. Concrete batch plant sites would be 5 to 40 acres in size, located about every 50 miles on private land near the long-term ROW. Concrete materials would be obtained through purchases from private contractors and mixed concrete would be hauled from the batch plant sites to the structure foundation construction sites within the long-term ROW.

Robinson Summit Substation

A new 500/345 kV substation would be constructed near the SWIP Utility Corridor approximately 20 miles northwest of Ely along U.S. Highway 50. The selection of the final location of the Robinson Summit Substation is dependent upon topography and the final design of the electric transmission system. The new Robinson Summit Substation would require a long-term ROW of approximately 108 acres to interconnect the 500 kV and 345 kV systems. A 200-foot microwave tower would also be installed. This substation would be accessible via permanent improvements and widening (to approximately 50 feet) an existing access road that connects to U.S. Highway 50. This access road would be approximately 0.5 mile in length,

resulting in approximately 3 acres of disturbance. The access road would be graveled or paved with asphalt to provide a suitable surface for long-term use.

Falcon – Gonder 345 kV Loop Into Robinson Summit 500/345 kV Substation

The existing Falcon-Gonder 345 kV transmission line would be looped into (i.e. a loop in consists of cutting into the existing line and connecting the two open ends to a new substation to transfer electricity to or from the new substation) the Robinson Summit Substation to interconnect NV Energy's northern and southern electrical systems for the first time. The existing 160-foot wide Falcon-Gonder transmission line ROW would require an amendment to accommodate the loop-in. The loop-in of the Falcon-Gonder line into the substation would require the installation of two single circuit 345 kV transmission lines a distance of approximately 0.5 mile from the existing line into the substation, creating two parallel 160-foot wide ROWs. Each 160-foot wide transmission line ROW, approximately 0.5-mile in length, would require a 10-acre ROW grant amendment, thus totaling 20 acres. The loop-in would essentially create two segments of the line formerly referred to as the Falcon-Gonder line. Once the loop-in is constructed, the two segments would be called the Falcon to Robinson Summit and the Robinson Summit to Gonder 345 kV transmission lines, respectively.

Harry Allen Substation

The existing ROW for the Harry Allen 500 kV substation, located about 20 miles northeast of Las Vegas, would be adequate to accommodate the additional equipment to support the proposed transmission line. No expansion would be required. The new substation interconnection components (i.e., A-frame, circuit breakers, relays, etc.) would be installed within the existing disturbed footprint of the operating substation.

Falcon Substation Upgrade

The existing company-owned Falcon 345 kV Substation located in Boulder Valley approximately 40 miles northeast of Battle Mountain would require an approximate 7-acre expansion of the existing fenced boundary to facilitate development of the ON Line Project. Of the 7 acres required for the expansion, 4 acres would be on NV Energy property and 3 acres would be obtained from the adjacent private landowner.

2.2.1.3 Construction Activities

Prior to actual construction activities, a geotechnical soil investigation would need to be conducted. Approximately 80-100 bore holes would be drilled along the transmission route and at the substation site. The results of this investigation would be used to facilitate the design of substation and transmission structure foundations, structure placement, and other engineering aspects of these facilities. This would take about 8 to 10 weeks to complete.

Construction of the ON Line facilities would take approximately 21 to 24 months to complete depending upon seasonal constraints and time of year when the Notice to Proceed is issued by BLM. Prior to construction, permitting, major equipment procurement, and much of the facility design would take place.

Electric transmission and substation construction would involve simultaneous construction of the Robinson Summit Substation, Falcon–Gonder 345 kV loop into the Robinson Summit Substation, the 236-mile transmission line, telecommunication facilities, and upgraded electrical work at the Harry Allen and Falcon Substations.

One Nevada 500 kV Transmission Line

Construction of the 236-mile transmission line between the new Robinson Summit Substation and the existing Harry Allen Substation would be performed in the following sequence of activities: pre-construction engineering surveys (months prior to construction); construction mobilization, including locating and establishing material yards, construction yards, and concrete batch plant sites, construction surveying and staking of the centerline, access roads, and work areas; construction of access roads; installing foundations and anchors; assembling and erecting the structures; installing ground rods and counterpoise; installing conductors, shield wires, and fiber optic cables; cleanup and site reclamation.

Site Preparation and Mobilization

All the activities described below would be fully described in the COM Plan that would be completed and approved prior to release of a Notice to Proceed for any portion of construction.

Land surveying on public and private lands would occur as pre-construction activities across the entire project, in advance of the start of construction. These surveys would mark authorized boundaries for all project components including the substation and transmission boundaries (permanent and temporary), angle points, individual transmission structures, guard structure and splice sites, telecommunication regeneration sites, access roads, etc.

Construction boundaries would be generally marked at 200 to 400-foot intervals with painted lathes or colored survey ribbons (flagging) and signs (as required). Closer intervals may be marked as needed. Flagging and signs would be maintained until final cleanup and/or reclamation is completed, after which they would be removed. At a minimum, reference stakes for all angle stations would be set on the short-term ROW with stakes for each structure prior to construction.

Pre-construction soil testing activities would take place along the short-term ROW in advance of the start of construction. These surveys would test soil at numerous locations. Short-term access would be required to facilitate these surveys. Also, all short-term major material yards, construction yards, construction staging areas, wire stringing and tensioning sites, and concrete batch plant sites located outside of the environmental study area would be identified and surveyed for the COM Plan.

Construction Mobilization

Construction mobilization activities outside of the short-term ROW include the contractor obtaining local construction permits and mobilization of the labor force and the necessary equipment to accomplish the construction of the substation, transmission, and fiber optic lines to the jobsite. Also during mobilization and other pre-construction activities, contractor-required off-ROW material storage yards, construction yards, and concrete batch plant sites would be located and established.

Construction Support in the Short-Term ROW

Construction support in the short-term ROW would comprise a variety of activities occurring during different stages of construction. These activities include dust control; storm water and wastewater management; erosion control; and management of hazardous substances. These various activities are described in further detail below.

Dust Control

Water application by truck would be the primary means of dust abatement at areas impacted by construction and near sensitive receptors. Areas of higher erosion or poor soils, outside of desert tortoise habitat, may require application of a palliative dust reducing agent. Any application of palliative or other dust reducing agent, other than water must first be approved by BLM. Speed limits on project designated access roads would be set and strictly enforced. Gravel or other similar material would be used where dirt access roads intersect the paved roadways to prevent mud and dirt track-out. All paved roads would be kept clean of objectionable amounts of mud, dirt, or debris, as necessary.

Helicopters may be used for a portion of the construction to string conductors, transport materials, workers and equipment, and to erect structures. Helicopters would fuel at pre-determined locations identified within and outside of the short-term ROW. Helicopter landing and fueling areas would be watered as necessary for safety and dust abatement.

Water for dust control would be obtained from private sources that have valid water rights and sufficient quantities.

Stormwater/Wastewater Management and Erosion Control

During construction, stormwater would be managed according to the stormwater permit issued by the State of Nevada to the project. In general, construction erosion control would consist of best management practices (BMPs), including techniques such as hay bales, silt fences, and revegetation, to minimize or prevent soils exposed during construction from becoming sediment carried off the site.

Wastewater would be generated during construction from:

- concrete loads emptied from trucks
- washing of exteriors of construction equipment and vehicles to remove accumulated dirt

Wastewater from concrete truck washdown and cleaning of construction equipment would be managed such that there would be no discharge offsite or discharge to surface waters.

Following construction, erosion control would include revegetation in addition to the aforementioned techniques.

Construction Utilities

Generally, no new electric power distribution, temporary water, sewer, or communications would be required for construction of any of the transmission line or substation facilities. Temporary construction power would be provided by small, portable on-site generators. Temporary water would be imported in water trucks from existing sources. Sewer would be provided by temporary portable facilities. Communications would be provided by existing cellular telephone providers and through existing 800 MHz radio communication facilities.

Short-term construction yards, major material yards, and concrete batch plant sites would all require electric power distribution, water, sewer, and communications. Locations for these sites would be selected based on the availability of these services from local providers.

Mineral Material Borrow Areas

All borrow material would be obtained from existing private suppliers. No new off-site borrow areas would need to be opened specifically for construction of the transmission line.

Concrete Batch Plant Sites

Due to the remote location of the ON Line Project, commercial concrete would generally not be available over most of the transmission line route. Construction of concrete foundations could require temporary concrete batch plants be established at locations along the transmission line route. In general most of the batch plant sites would be located outside of the short-term ROW on private land at locations with good access to the public road system and local utility infrastructure. The location of the batch plant sites would also be dictated by haul times to the actual construction sites. These batch plant sites would require fencing, gravel surfacing, and portable office space.

Access Road Construction

Equipment access is required to every transmission structure. The project would utilize existing transmission line access roads both inside and outside of the short-term ROW wherever practical to minimize the construction of new roads. It is anticipated that some of the existing dirt roads would require both upgrading and maintenance during construction to provide safe access to structure sites and to maintain adequate level of service to other public users. In areas where existing access roads do not provide adequate access to construction sites, roads would be improved and/or new roads would be built. New roads would consist of either short spur roads from existing roads to construction sites, longer linear roads to connect the short-term ROW to existing access roads, and/or a centerline access road that connects one structure to the next between other access roads. New spur roads would be located within the short-term ROW whenever practical and would be located to minimize visual impacts. The number of new spur roads would be held to a minimum, consistent with their intended use (e.g., structure construction or conductor stringing and tensioning). A Construction Road Plan would be provided on the structure location drawings submitted with the COM Plan.

All new and improved roads would be constructed by the construction contractor. In areas of steep terrain, the road would be built so that there would be approximately 20 feet of travel way and the total disturbed width of the road (toe of fill to top of cut) would vary depending on the terrain (i.e., greater in steep terrain, less in flatter terrain). In flat terrain the road would be built so that there would be approximately 20 feet of travel way with a 2-foot berm of salvaged topsoil on one or both sides of the road.

In areas where new roads would be constructed, environmental resource monitors would conduct surveys for sensitive environmental resources prior to construction. Environmentally sensitive areas would be staked and/or flagged to prevent the contractor from entering or disturbing these sensitive areas during construction. Meandering roads may be required in specific areas due to terrain and geologic conditions.

After line construction, all new and improved roads identified as temporary disturbance on the drawings, outside of potentially suitable and critical desert tortoise habitat, would be reclaimed in compliance with the Reclamation Plan included in the COM Plan.

Structure Site Clearing

The following section contains descriptions of typical construction-related activities associated with structure construction and clearing. Structure site clearing (removal of brush) would be kept to a minimum. Grading of structure sites and work areas would only be performed as required to provide a flat working surface such that maintenance and construction cranes or other major equipment can work safely.

Typical Structure Site and Work Area

At each structure site, work areas are required to facilitate the safe operation of equipment and construction operations. Typical work areas in flat terrain are about 200 feet wide by 220 feet wide (1 acre). When practicable, access within the work area would be by overland travel with minimal to no grading required in the work site. In other work areas vegetation would only be cleared to the extent necessary. After line construction, all work areas identified as temporary disturbance on the structure location drawings would be reclaimed in compliance with the Reclamation Plan included in the COM Plan.

Structure Site and Work Area in Steep/Rough Terrain

Work areas would vary depending on the site conditions. Where topography dictates, work areas would be expanded to 200 feet wide by 440 feet long (2 acres) and would be partially cleared and graded to accommodate the safe operation of heavy equipment and cranes by construction and maintenance crews. Following construction, portions of the site not required for maintenance would be reclaimed in compliance with the Reclamation Plan included in the COM Plan. In steep terrain, a crane pad would be required for maintenance of the structure. This crane pad and the access road to the structure would remain after construction. Extensive grading along steep slopes may be required to accommodate some structure sites.

Vegetation Clearing

In addition to vegetation clearing at structure sites, in forested areas, trees would be removed along the long-term ROW to allow construction vehicle access, for wire stringing locations, and as needed for electrical clearances under and to the side of the transmission line conductors. Tree removal for electrical clearance would be selective and would not include every tree in the 200-foot wide long-term ROW. Generally, trees over 15 feet in height within conductor low sag areas would be removed to provide the code required clearances. Tree removal would be conducted to allow for a minimum ten-year growth period.

Foundation Installation

Excavations for foundations would be made with vehicle-mounted augers, backhoes, and other power equipment. In rocky and cemented soil areas, the foundation holes may be excavated by drilling and blasting, or special rock anchors or piles may be installed. In extremely sandy areas, soil stabilization by water or a gelling agent may be used prior to excavation. In areas with a high water table, holes may need to be shored and/or dewatered prior to the installation of concrete.

After excavations are completed, the required cast-in-place or precast concrete footings would be installed. The cast-in-place concrete footing would be installed by placing reinforcing steel and a stub or anchor bolts into the foundation hole and encasing it in concrete. The precast concrete footings would be cast off site at a precast concrete facility, trucked to the structure site, lowered into an approximate 5-foot deep excavation, and backfilled with native material. Foundation excavation and installation would require access to the site by a power auger or drill, track excavators, a crane, material trucks, and ready-mix trucks using the access roads indicated on the structure location drawings submitted with the COM Plan.

Guyed-V and guyed tubular three pole structures require the installation of anchors and guy wires to support the structure loads. Depending upon soil type and engineering strength requirements, anchors would be drilled and grouted in small diameter holes (less than 1-foot in diameter) up to 40 feet deep, or installed in minimum 4-foot diameter excavations ranging from 12 to 20 feet deep.

Foundation and anchor excavations would not be left open for extended periods of time or unfenced. Excavations would be covered and/or fenced where practical to protect the public and wildlife. Soil removed from foundation excavations would be used as backfill, road fill, or spread within the structure work area to blend with the natural terrain. Salvaged top soil would be placed over regraded areas.

Structure Assembly and Erection

Structure components and associated hardware would be shipped to each structure site or helicopter fly yard by truck. Steel members would be assembled by hand with the assistance of pneumatic tools and cranes into subsections of convenient size and weight. The assembled subsections would be hoisted into place by a large crane and then fastened together to form a complete structure, or flown as assembled units from the helicopter fly yards to designated structure sites. Helicopter fly yards would be generally located every 5 miles.

Conductor Installation

After the structures are erected, insulators, hardware, and stringing sheaves would be delivered to each structure site. The structures would then be rigged with insulator strings and stringing sheaves at each ground wire and conductor position. To protect the public and other existing facilities during wire installation, guard structures would be erected adjacent to existing highways, railroads, power lines, structures, and other obstacles. Guard structures normally consist of wood H-frame structures placed on either side of an obstacle. These structures prevent ground wire, conductor, or equipment from falling onto an existing obstacle. Most guard structures would be identified on the structure location drawings, however due to varying construction techniques, some guard structures may not be identified until construction is in progress. Equipment for erecting guard structures includes augers, line trucks, pole trailers, and cranes. Guard structures may not be required for small roads or protection may be accommodated by line trucks suspending cross arms or pulleys. On other occasions, other safety measures such as barriers, flagmen, or other traffic control would be used to provide the required protection.

Next, a pilot line would be pulled (strung) from structure to structure and threaded through the stringing sheaves at each structure. This pilot line is normally pulled by a helicopter. After the pilot line is pulled from one end of the wire pull to the other, a larger diameter, stronger line would then be attached to the pilot line and strung. This is called the pulling line and it is attached to a tensioner (breaking equipment) on one end and a power puller on the other. The pulling line is attached to the ground wire, fiber optic cable, and conductors to install each in a controlled tension manner (**Figure 2.2-3**). This process would be repeated until the ground wire, fiber optic cable, and conductor would be pulled through all sheaves.

After the ground wire, fiber optic cable, and conductor are pulled through all sheaves, each would be properly tensioned and then lifted from the sheaves and dead ended or clipped into the line hardware. Conductor would be spliced together using implosive sleeve devices which are installed with pressure provided by an explosive chord. Implosive dead ends and compression jumpers would be installed at all dead end and line angle towers. Implosive-type sleeves would also be installed at all wire splice locations (approximately every 10,000 feet).

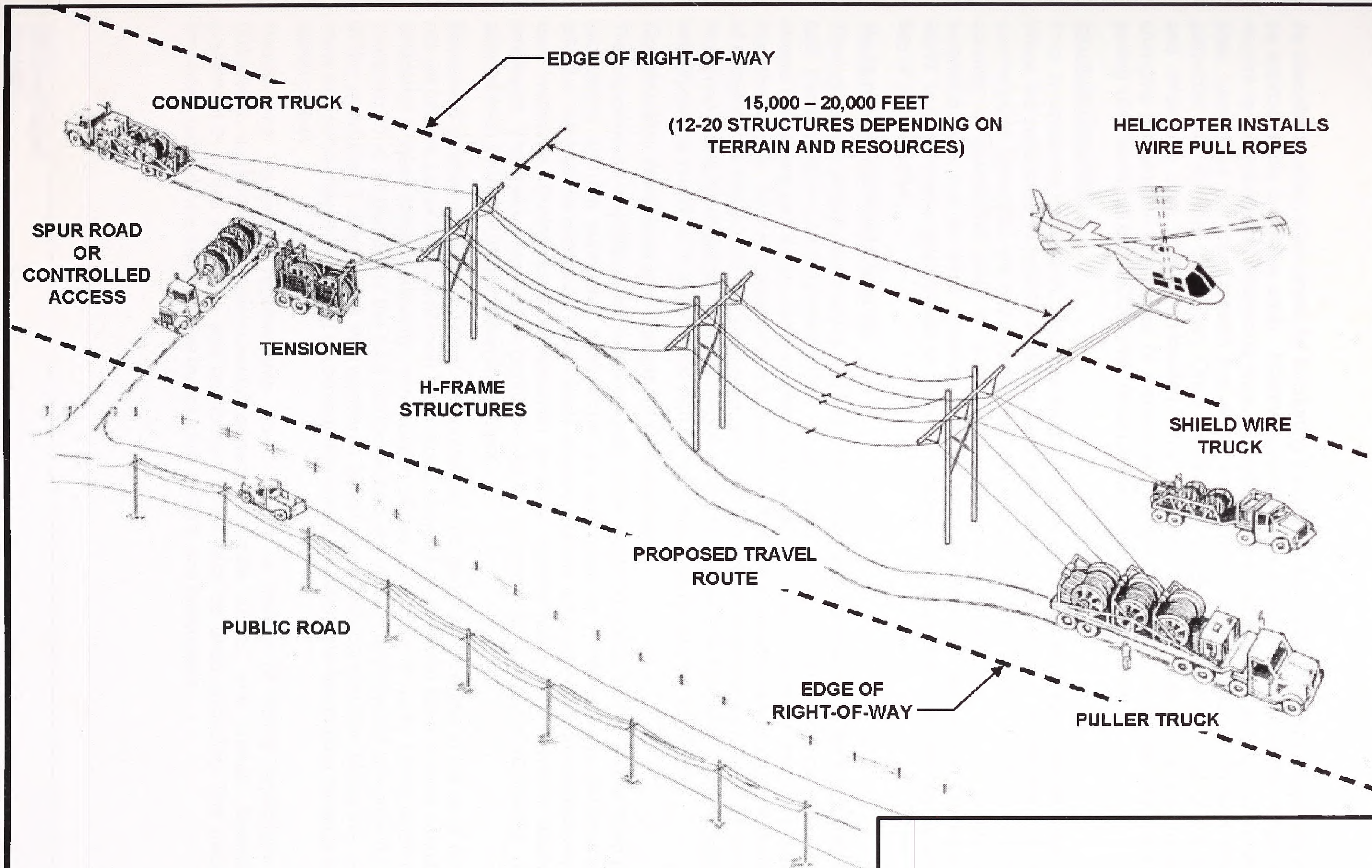


FIGURE 2.2-3
BASIC WIRE HANDLING EQUIPMENT
ON LINE PROJECT

Source: Sierra Pacific Power Co., *Alturas Transmission Line Draft EIR/IS*, June 1997.

As described earlier, work areas for tensioning equipment and pulling equipment typically would be approximately 5.4 acres each. However, construction in the steep and rough terrain could require larger pulling and tensioning sites. To the extent possible, typical pulling and tensioning sites needed for this transmission line would be identified on the structure location drawing submitted with the final COM Plan. Once construction starts, it is probable some of the pulling and tensioning sites may be relocated. This relocation may be required to accommodate changing construction techniques, or material and design changes. Overall, the total number of pulling sites identified in the COM Plan would not be expected to increase.

Structure Grounding

Prior to conductor installation, structure footing resistance along the route would be measured. When the resistance to remote earth for each transmission structure is greater than 20 ohms, counterpoise (grounds) are required to lower the resistance to 20 ohms or less. Counterpoise consists of galvanized steel or copperweld cable buried a minimum of 12 inches deep, extending from one or more structure legs for approximately 200 feet, within the long-term ROW. In some cases ground rods or other more advanced grounding methods may be used in lieu of counterpoise.

Reclamation and Final Clean Up

Throughout the project, work areas would be kept clean and maintained in the yards and along both the short-term and long-term ROW. Trash would be continually picked up and stored in closed containers and empty reels and blocking would be returned to yards and then removed from the project. After the conductor has been installed, the contractor would begin reclamation of disturbances within both the short-term and long-term ROW and access roads. Areas to be reclaimed would be re-graded back to natural contours and top soil restored. Final reclamation and reseeding would be in accordance with permit requirements and the COM Plan.

Construction Workforce and Equipment Requirements

The transmission and telecommunication facility work would be performed by one or more prime contractors and the substation work would be performed by multiple prime contractors. In addition, each prime contractor would likely employ multiple subcontractors to supplement their own workforce. During peak construction periods, approximately 500 workers would be employed. The peak construction period would be expected to last about 18 months of the approximate 24-month transmission line project.

Because the construction work would be contracted, the geographic region of the work force is not yet known. Local and out-of-town labor would depend on the local labor market conditions, contractor's labor force availability, construction status, and time of year. Local labor could comprise 10 to 20 percent of the total workforce and out-of-town labor would comprise the rest of the workforce. It is assumed this workforce would move with construction along the project route and find temporary housing in communities within a reasonable commuting distance to the active project.

Vehicle and equipment requirements would include a variety of heavy equipment like bulldozers, backhoes, vehicle-mounted augers, concrete trucks, and cranes. Specialized equipment to install structures and conductors would also be used, including: line trucks, a tensioner, ground wire trucks, puller trucks, pole trailers, and helicopters.

2.2.1.4 Substation Design and Construction

Construction of the new Robinson Summit 500/345 kV Substation, expansion of the existing Falcon Substation, and additions inside the existing Harry Allen 500 kV Substation are required to facilitate the power transmission associated with the new 500 kV transmission line.

In the proposed substation development and expansion areas, the ground would be cleared, graded and compacted according to the civil engineering plan for these facilities. The surfaces would be slightly sloped and other civil design features such as ditches, culverts and rip-rap would be installed where required for adequate drainage to facilitate the safe construction, operation, and maintenance of these facilities. The stockpiled topsoil and organic material would be placed on undeveloped and graded cut-and-fill slopes.

Robinson Summit Substation

Approximately 108 acres of land would be permanently required for the Robinson Summit Substation development, including the access road. As described in the original Plan of Development and the DEIS for the EEC Project, NV Energy has proposed the site for the Robinson Summit Substation approximately 1/4 - 1/2 mile west of the SWIP ROW grant location to more level ground outside the designated SWIP Utility Corridor. Major equipment installed at the substation would include control enclosures, two 500/345 kV autotransformers, two 500 kV shunt reactors, one 345 kV shunt reactor, 345 kV series compensation equipment, 500 kV and 345 kV circuit breakers and switches, and associated electrical appurtenances and telecommunication equipment. The layout of the substation facilities would facilitate the ability to accommodate future expansion requirements within the fenced substation area.

Interconnection with NV Energy's northern electric system would be accomplished by looping the existing Falcon – Gonder 345 kV transmission line into the Robinson Summit Substation. Installation of two 345 kV line terminals would be required at the Robinson Summit Substation creating the Falcon – Robinson Summit and the Robinson Summit - Gonder 345 kV transmission lines to control the flow of power into the northern electric system. In addition, 345 kV series capacitors and shunt reactors would be installed on the Falcon terminal side of the Falcon – Robinson Summit 345kV transmission line to reduce the impedance and electrical losses associated with operation of this line.

After grading is complete, fencing would be installed around the perimeter of the substation for security and to prevent unauthorized persons and wildlife from entering. Reinforced concrete footings and foundations would then be constructed to support structures and equipment. Buried conduit and/or a pre-cast concrete trench system would be installed throughout the substation for electrical control cables. A ground grid consisting of buried cables approximately 12 inches below grade would also be installed to ensure that all equipment, structures, and fence components are properly grounded. Gravel or a road base type material would be installed over the substation pad to provide electrical isolation for workers, a suitable working and drive surface, to inhibit weed growth, and to reduce fugitive dust. Primary drive paths within the substation may be paved with asphalt to provide a durable surface for long-term use.

Steel structures would be erected on the concrete footings to support switches, electrical buswork, and other equipment, as well as termination structures for the incoming and outgoing transmission lines. Structures would be fabricated from tubular steel and galvanized or painted with a non-reflective finish. Major equipment would be set by crane and either bolted or welded to the foundations to resist seismic forces. Oil spill containment basins would be installed around all major oil-filled equipment and if the containment area was ever used, the oil would be removed and properly disposed of according to approved practices. Control cables would be

installed throughout the substation from equipment back to a central control enclosure. The control equipment would be set to the proper settings and tested before the substation is energized.

Harry Allen Substation

The existing ROW for the Harry Allen 500 kV substation would be adequate to accommodate the additional equipment to support the proposed transmission line. No expansion would be required. The new substation interconnection components, including two 500 kV reactors, circuit breakers and switches, and associated electrical appurtenances and telecommunication equipment would be installed within the existing disturbed footprint of the operating substation. The construction processes and activities would be similar to those described above for the Robinson Summit Substation development.

Falcon Substation Upgrade

The existing company-owned Falcon 345 kV Substation would require expansion to facilitate development of the ON Line Project. New components to be installed at this substation include one 345 kV reactor, 345 kV series compensation, 345 kV circuit breakers, switches, and associated electrical appurtenances and telecommunication equipment. An approximate 7-acre expansion of the existing fenced boundary would be needed to accommodate this additional equipment (**Figure 2.2-1a**). The construction processes and activities would be similar to those described above for the Robinson Summit Substation development.

2.2.1.5 Telecommunications Design and Construction

The fiber optic, microwave, and mobile radio telecommunications system described below would facilitate operational control and monitoring of the Robinson Summit Substation and transmission facilities. The telecommunications system would include a fiber optic line approximately 236 miles long to be installed within one or both shield wires on the 500 kV transmission line structures and also microwave and mobile radio facilities to be installed at the Robinson Summit Substation.

Fiber Optic Line Design and Construction

A fiber optic cable would be installed within one or both of the shield wires on the 236-mile 500 kV transmission line structures. The fiber count contained within the fiber optic cable is dependent upon the electric transmission control and monitoring requirements. The fiber optic cable requires splice points approximately every 2 to 4 miles along the transmission line route. At splice points, the fiber optic cable would be terminated at the top of the structure and routed down the structure to a splice box near or buried at ground line. Optical regeneration stations would also be required approximately every 40 to 60 miles. Two to four regeneration stations would be built within or adjacent to the transmission line long-term ROW. Each of the regeneration stations would require a fenced area of approximately 60 feet by 80 feet, a control enclosure approximately 15 feet by 20 feet, an emergency power generator, a propane tank, vehicle access, and commercial power from the local electric utility. The proposed regeneration stations would generally be sited in close proximity to existing electric distribution lines to minimize the distance required for new service lines.

Microwave and Mobile Radio Design and Construction

Microwave and mobile radio telecommunications equipment would also be installed at the Robinson Summit Substation. The microwave tower would be approximately 200 feet tall to connect with NV Energy's existing microwave communication system. This tower would be lighted according to Federal Aviation Administration (FAA) standards using the current *Advisory*

Circular 70/7460-1K Obstruction Marking and Lighting Requirements (FAA 2007). An approximate 15 feet by 20 feet communication building would also be required within the proposed Robinson Summit Substation development.

2.2.1.6 Operations, Maintenance, and Abandonment

The electric transmission lines, telecommunication facilities, and substations would be operated 24 hours per day, 7 days per week. The electric substations would be visited regularly to perform routine maintenance and ensure they are functioning correctly. Vegetation would be trimmed as-needed under and along the transmission line ROW to minimize potential interference with the transmission lines.

Workforce and Equipment Requirements

Planned operations and maintenance on transmission lines would consist of an annual helicopter or vehicle line patrol by two linemen. It would probably take two days per year to patrol the proposed transmission lines. Additional unscheduled patrols may be required by ATV, truck, or bucket truck, if issues are encountered. Unplanned operations and maintenance may be required to correct failures. These are normally site-specific issues (e.g., damaged insulator on one structure, erosion around foundation, post fire inspection, etc.). Whatever labor and equipment is required to fix the problem would be dispatched. Unplanned maintenance could involve 40 to 80 worker days on average per year. NV Energy would notify the respective BLM district office of such occurrences, and coordinate any necessary ROW authorization amendments or consultations as required.

Planned operations and maintenance on the substations would consist of numerous equipment testing and maintenance requirements on all major equipment such as transformers, reactors, and breakers receive annual inspections (operation verification, visual inspections, infrared inspections, etc.). More intensive inspections and tests are conducted on major equipment every three to five years (oil samples, switch alignment, and manufacturer scheduled maintenance). Based on the proposed project scope, workforce requirements could total 200 to 400 worker days per year.

Access and Traffic

The electric transmission line would be inspected from the ground or the air on an annual basis. Ground inspections would be conducted generally following the centerline travel route used for construction. This path may also be utilized for required maintenance or repair.

Access to the Robinson Summit Substation would be from US-50 over an existing dirt road that would be widened and improved from the highway to the substation site. The road would be surfaced with asphalt or gravel to provide a durable surface for long-term use.

Access to the Falcon Substation and Harry Allen Substation would be from existing paved and gravel roads already constructed to these operating substations.

Abandonment

The new electric transmission and telecommunications facilities would be integrated into NV Energy's existing electric transmission and telecommunications systems. The facilities would be operated and maintained for the foreseeable future. If at some point these facilities were no longer needed as part of the electric system, then the transmission towers and lines would be removed and the area restored.

2.2.2 Environmental Protection Measures and Best Management Practices

Activities under the Proposed Action and Action Alternative would include environmental protection measures that are an integral part of the Proposed Action. These measures follow BMPs established by the BLM for the construction, operation, and maintenance of the ON Line Project and other related facilities in this region (**Appendix 2A, Best Management Practices**). These BMPs would be followed to avoid or minimize the potential for adverse environmental effects resulting from project-related activities.

BMPs are described for the following activities:

- Air pollution prevention
- Landscape preservation and impact avoidance
- Erosion and sediment control
- Utility construction
- Biological resources
- Cultural resources
- Paleontological resources
- Noxious and invasive weed management
- Reclamation (site restoration, revegetation)
- Visual resources
- Water pollution prevention and monitoring
- Noise prevention
- Hazardous material storage, handling, and disposal, and safety measures
- Socioeconomics

In addition to the BMPs, to ensure public health and safety, NV Energy would comply with FAA permit requirements for project components that may present aviation hazards. The FAA is the oversight agency that determines aerial marking requirements for aviation hazards.

The COM Plan would detail the methods and procedures to be used in the construction of the electric transmission, substation and telecommunications facilities. The COM Plan would incorporate site-specific stipulations, terms, and conditions in order to satisfy all construction requirements, as well as operational, maintenance, and abandonment/reclamation requirements associated with lands administered by the Ely and Southern Nevada District Offices of the BLM where project features would be located.

Further, the following Management Actions taken from the Ely RMP (BLM 2008a) would be implemented for fish and wildlife and special status species habitat.

General Wildlife Habitat Management (Aquatic and Terrestrial)

WL-4: Mitigate all discretionary permitted activities that result in the loss of aquatic and priority wildlife habitats by improving 2 acres of comparable habitat for every 1 acre of lost habitat as determined on a project-by-project basis.

WL-6: Where appropriate, restrict permitted activities in big game calving/fawning/kidding/lambing grounds and crucial summer range from April 15 through June 30.

WL-7: Where appropriate, restrict permitted activities in crucial winter range from November 1 through March 31.

Desert Bighorn Sheep Habitat

WL-13: Where appropriate, restrict permitted activities within occupied desert bighorn sheep habitat from March 1 through May 31 and from July 1 through August 31.

Special Status Species Habitat

SS-4: Where appropriate, restrict permitted activities from May 1 through July 15 within 0.5 mile of raptor nest sites unless the nest site has been determined to be inactive for at least the previous 5 years.

Mojave Desert Scrub Habitat

SS-33: Implement the following management actions for desert tortoise habitat.

Within desert tortoise ACECs: If fence construction occurs during the tortoise active season, a qualified tortoise biologist will be onsite during construction of the tortoise-proof fence to ensure that no tortoises are harmed. If the fence is constructed during the tortoise inactive season, a qualified tortoise biologist will thoroughly examine the proposed fence line and burrows for the presence of the tortoises no more than three days before construction. Any desert tortoises or eggs found in the fence line will be relocated offsite by the biologist in accordance with approved protocol (Desert Tortoise Council 1994, 1999 *in* BLM 2008a). Tortoise burrows that occur immediately outside of the fence alignment that can be avoided by fence construction activities will be clearly marked to prevent crushing.

- Within desert tortoise ACECs: Projects will require fencing, unless determined by the BLM authorized officer and U.S. Fish and Wildlife Service (USFWS) that the project should not be fenced. In accordance with current specifications, fencing will consist of 1-inch horizontal by 2-inch vertical mesh. The mesh will extend at least 18 inches aboveground and, where feasible, 6 to 12 inches belowground. In situations where it is not feasible to bury the fence, the lower 6 to 12 inches of the fence will be bent at a 90 degree angle towards potentially approaching tortoises and covered with cobble or other suitable material to ensure that tortoise or other animals cannot dig underneath.
- Within desert tortoise ACECs: Tortoise fencing will be inspected on a regular basis sufficient to maintain an effective barrier, and any repairs completed within 72 hours from March 1 through October 31, and within 7 days from November 1 through February 28/29. The operator will inspect the fencing at least on a quarterly basis and after major precipitation events to ensure zero ground clearance. Monitoring and maintenance will include regular removal of trash and sediment accumulation and restoration of zero ground clearance between the ground and the bottom of the fence, including re-covering the bent portion of the fence if not buried. The operator will perform maintenance when needed including removing trash, sediment accumulation, and other debris. Fencing will be removed upon termination and reclamation of the project, or when it is determined by the BLM authorized officer and USFWS that the fence is no longer necessary.
- Within desert tortoise ACECs: During surface-disturbing activities, tortoise burrows will be avoided whenever possible. If a tortoise is found onsite during project activities, which may result in take of the tortoise (i.e., in harm's way), such activities will cease until the tortoise moves, or is moved, out of harm's way. The tortoise will be moved by a qualified tortoise biologist. All workers also will be instructed to check underneath all vehicles before moving such vehicles and within stockpiled materials. Tortoises often take cover under vehicles and construct burrows in stockpiled material.

- Within desert tortoise ACECs: The BLM authorized officer will approve the selected consulting firm/biologist to be used by the applicant to implement the terms and conditions of the permit issued by the BLM. Any biologist and/or firm not previously approved will submit a curriculum vitae and be approved by the BLM authorized officer. Other personnel may assist with implementing terms and conditions that involve tortoise handling, monitoring, or surveys, only under direct field supervision of the approved, qualified biologist.
- Within desert tortoise ACECs: Tortoises and nests that are found will be handled and relocated by a qualified tortoise biologist in accordance with USFWS-approved protocol. Burrows containing tortoises or nests will be excavated by hand, with hand tools, to allow removal of the tortoise or eggs. Desert tortoises moved during the tortoise inactive season or those in hibernation, regardless of date, will be placed into an adequate burrow; if one is not available, one will be constructed in accordance with Desert Tortoise Council protocol. Natural burrows will be checked prior to placing a tortoise in the burrow to ensure it is not occupied by another species. During mild temperature periods in the spring and early fall, tortoises removed from the site will not necessarily be placed in a burrow. Tortoises and burrows will only be relocated to federally managed lands. If the responsible federal agency is not the BLM, verbal permission, followed by written concurrence, will be obtained before relocating the tortoise or eggs to lands not managed by the BLM.
- Desert tortoises moved in the winter (i.e., November 1 through February 28/29), or those in hibernation, regardless of date, will be placed into an adequate burrow; if one is not available, one will be constructed utilizing the protocol for burrows in Section B.5.f. of the USFWS-approved guidelines (USFWS 1994 *in* BLM 2008a).
- All projects in desert tortoise habitat will be reviewed by the BLM's wildlife staff to ensure that appropriate measures have been incorporated into the BLM authorization (e.g., material site, land sale, or off-highway vehicle event) to minimize the potential take of desert tortoise or loss of habitat.
- A BLM representative(s) will be designated and will be responsible for overseeing compliance with terms and conditions of all permitted activities and reporting requirements. The designated representative will provide coordination among the permittee, project proponent, the BLM, and the USFWS.

SS-40: Outside of designated corridors, above-ground facilities will not be constructed within 0.25 mile of greater sage-grouse leks. No new roads will be constructed within 0.25 mile of greater sage-grouse leks. Exceptions may be granted by the authorized officer, in consultation with Nevada Department of Wildlife, if the project can be designed so that it will not affect breeding activity nor degrade the integrity of the habitat associated with the lek, or if the lek has been inactive for at least 5 consecutive years or the habitat has changed such that there is no likelihood that the lek will become active.

SS-41: Where appropriate (i.e. visible from actual lek), restrict permitted activities from March 1 through May 15 within 2 miles of an active greater sage-grouse lek.

SS-42: Where appropriate, restrict permitted activities from November 1 through March 31 within greater sage-grouse winter range. (Within identified winter habitat, site specific surveys may be conducted to confirm winter use and habitat.)

SS-43: Survey all proposed ground disturbing activities in suitable pygmy rabbit habitat utilizing the appropriate protocol. Surveys will be completed by a qualified biologist approved by the Ely District Office.

Resource-specific mitigation measures are described in Chapter 4, Environmental Consequences.

2.2.3 Proposed Action Summary

Table 2.2-4 summarizes the estimated acres of disturbance (short-term and long-term) for the Proposed Action. The short-term disturbance is based on actual construction disturbance and does not include the entire 200-foot wide long-term ROW. The short-term disturbance acreages shown in the table also include the acres that would be long-term disturbance after reclamation activities are completed.

TABLE 2.2-4 ESTIMATED ACRES OF DISTURBANCE FOR PROPOSED ACTION

PROJECT ELEMENTS	DISTURBANCE	
	SHORT-TERM	LONG-TERM
Robinson Summit Substation, + 50-ft wide access road	149 + 4	108 + 4
Falcon-Gonder 345 kV Loop-in (structures)	6	1
Segment 6C (structures)	572	189
Segment 8 (structures)	212	21
Segment 9A (structures)	59	29
Segment 9B (structures)	42	4
Segment 6C (structures)	73[1]	73
Segment 11 (structures)	142[1]	142
Falcon Substation Expansion	7	7
Other Transmission Line Components (e.g. Access roads - in and out of the ROW, Fiber Optic Regeneration Sites and Electric Power Service, Material/Construction Yards)	Approx. 1,927	216*

[1] All disturbances for structures within desert tortoise habitat would be long-term.

*211 acres for access roads in desert tortoise habitat, 4 acres for fiber-optic regen sites.

2.3 Action Alternative

The Action Alternative would consist of all of the same facilities as described under the Proposed Action, but the 500 kV transmission line and associated facilities would follow a parallel route alignment approximately 1,800 feet to the east of the Proposed Action within the SWIP Utility Corridor.

Under the Action Alternative, the separation between the Action Alternative line and the existing ROW authorization for the GBT500 kV line within the SWIP Utility Corridor would be 200 feet, the minimum line separation from a land perspective.

The transmission line segments of the Action Alternative include 6C, 8, 9B, 9C, 9D and 11. Alternative segments (or sub-alternatives) of the Action Alternative include segments 9A instead of 9C as well as Segment 10 instead of 9B, 9C and 9D. Sub-alternative segments 9A and 10 deviate from the SWIP Utility Corridor. The linear distance of the Action Alternative would be shorter than the Proposed Action by about 2 miles, for a total length of 234 miles. The facilities and alignment described under the Action Alternative were described and analyzed in the EEC Project DEIS (i.e., RS-HA Line #2). Also, under the Action Alternative, a second substation

location, called Robinson Summit Substation-Site B (RSS-Site B), is proposed as a sub-alternative to the Robinson Summit Substation described for the Proposed Action. **Table 2.3-1** summarizes the estimated acres of disturbance (short-term and long-term) for the Action Alternative. Again, the short-term disturbance is based on actual construction disturbance and does not include the entire 200-foot wide long-term ROW. Short-term disturbance acreages shown in the table also include the acres that would be long-term disturbance after reclamation activities are completed.

TABLE 2.3-1 ESTIMATED ACRES OF DISTURBANCE FOR ACTION ALTERNATIVE

PROJECT ELEMENTS	DISTURBANCE	
	SHORT-TERM	LONG-TERM
Robinson Summit Substation (RSS), + 50-ft wide access road	149 + 4	108 + 4
Falcon-Gonder 345 kV Loop-in for RSS (structures)	6	1
Segment 6C (structures)	572	189
Segment 8 (structures)	212	21
Segment 9A (Alternative) (structures)	59	29
Segment 9B (structures)	42	4
Segment 9C (structures)	33	23
Segment 9C (structures)	73[1]	73
Segment 10 (Sub-Alternative) (structures)	59	148
Segment 11 (structures)	144[1]	144
Falcon Substation Expansion	7	7
RSS-Site B (Sub-Alternative) + 5 mile existing access road improvements and 2.5-mile long 20-ft wide access road	105 +15	60 + 15
Falcon-Gonder 345 kV Loop-in for RSS-Site B Sub-Alternative (structures)	45	5
Other Transmission Line Components (e.g. Access roads, Fiber Optic Regeneration Sites and Electric Power Service, Material/Construction Yards)	Approx. 1,927	283*

[1] All disturbances for structures within desert tortoise habitat would be long-term.

*279 acres for access roads in desert tortoise habitat, includes Segment 10 and regen sites.

RSS-Site B Sub-Alternative

Since the distribution of the DSEIS, a second substation location, the RSS-Site B sub-alternative, has been assessed and considered in response to public comments, in order to avoid conflict with the authorized ROW for GBT's Thirty Mile Substation. CEQ regulations at 40 CFR 1503.4(a)(2) address an agency's duty to respond to such comments. The RSS-Site B would have impacts similar to the Robinson Summit Substation and would not produce "substantial changes in the proposed action that are relevant to environmental concerns." As such, RSS-Site B does not meet the criteria set forth in 40 CFR 1502.9(c) that would trigger the need for a supplemental EIS. This alternative substation location is proposed as a sub-alternative for the Action Alternative (see **Figure 2.3-1**). The substation location would be shifted approximately 4 miles to the south. This substation would be accessible via permanent improvements and widening (to approximately 50 feet) of about 5 miles of an existing county access road (Jakes Valley Road) that connects to U.S. Highway 50, and construction of an additional 2.5 miles of new access road. Improvements to Jakes Valley Road would include creating a wider turning radius at the intersection of Highway 50 and expanding the existing county access road at approximately 12 locations between Highway 50 and the new access road to the substation.

The new access road would have an approximately 20-foot wide road surface with water control ditches on each side, resulting in approximately 30 feet of disturbance width for the length of the road. The road would provide access to the substation and extend further east to connect with an existing BLM road used for ranching and recreation activities. The new access road construction and minor improvements to the existing access road would result in approximately 15 acres of disturbance. The access roads would be graveled or paved with asphalt to provide a suitable surface for long-term use.

The RSS-Site B facility itself would be similar to the Proposed Action Robinson Summit Substation, although the footprint would be smaller due to the flatter topography and the reduction in need for as much cut and fill disturbance as under the Proposed Action substation site. The RSS-Site B would require a short-term ROW of 45 acres for temporary work areas (200-foot buffer area) and a long-term ROW of 60 acres for the substation. A 200-foot microwave tower would also be installed. See **Section 2.2.1.4**.

An 8-foot high fence would be constructed around the RSS-Site B, which would include colored slats on the west and north sides, using a color from the BLM standard color chart (possibly beetle), to reduce the visual effect of the substation in the landscape.

Falcon – Gonder 345 kV Loop Into RSS-Site B Sub-Alternative

The existing Falcon-Gonder 345 kV transmission line would be looped into the RSS-Site B sub-alternative in a similar fashion as presented under the Proposed Action. The existing 160-foot wide Falcon-Gonder transmission line ROW would require an amendment to accommodate the loop-in. The loop-in of the Falcon-Gonder line into the substation would require the installation of two single circuit 345 kV transmission lines a distance of approximately 4.0 miles from the existing line into the RSS-Site B sub-alternative, creating two parallel 160-foot wide ROWs. Each 160-foot wide transmission line ROW, approximately 4 miles in length, would require a 78-acre ROW. There would be 45 towers installed between the two lines resulting in about 4.5 acres of long-term disturbance. Once the loop-in is constructed, the two segments would be called the Falcon to Robinson Summit and the Robinson Summit to Gonder 345 kV transmission lines, respectively.

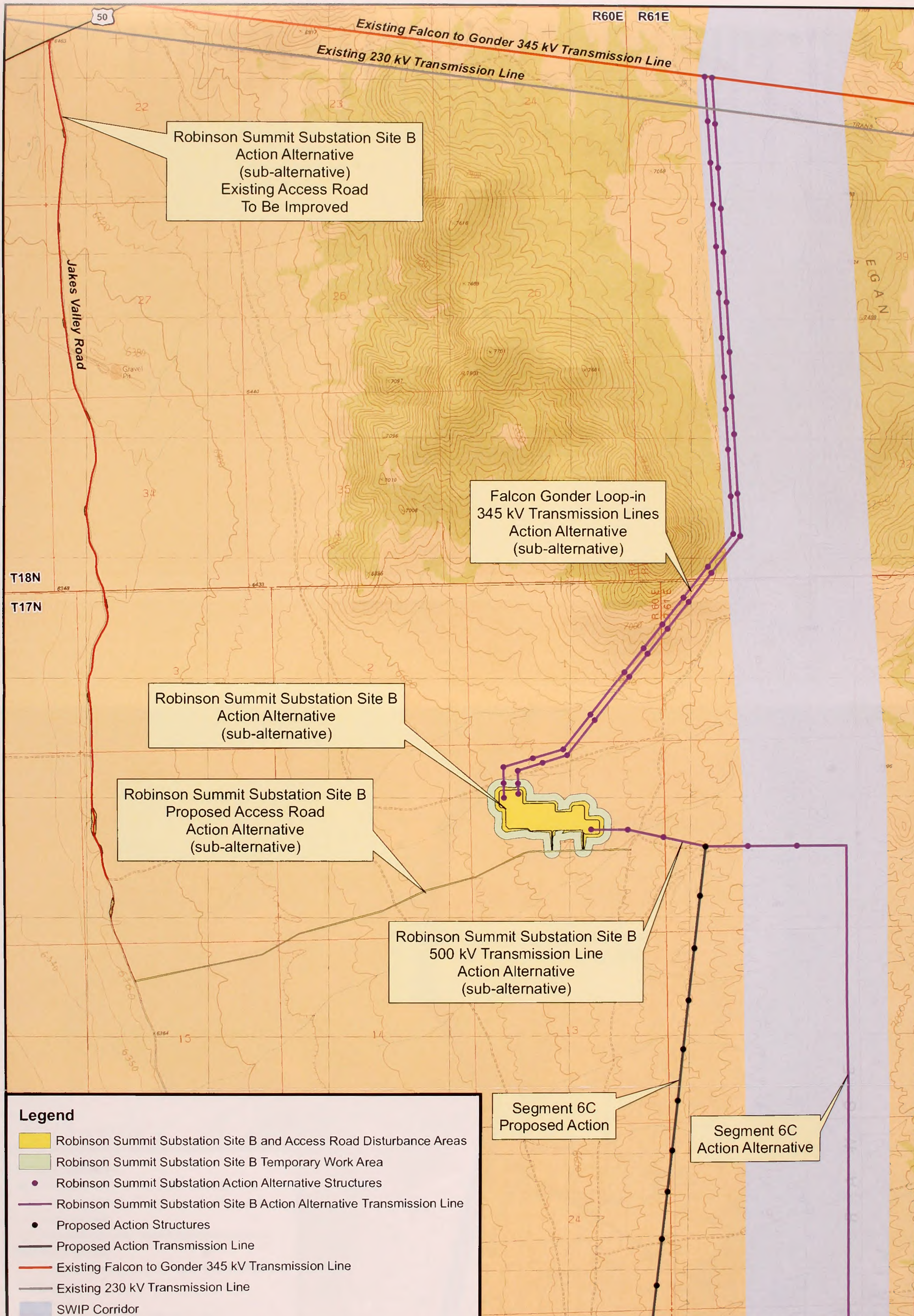


FIGURE 2.3-1
ROBINSON SUMMIT SUBSTATION SITE B ACTION ALTERNATIVE (SUB-ALTERNATIVE) ON LINE PROJECT

SWIP Utility Corridor Alternatives

To address the topographic and construction constraints in a section of the SWIP Utility Corridor that may result in a "bottleneck-type" compression of transmission line spacing between ROWs, two SWIP Utility Corridor alternatives are proposed for the Action Alternative (see **Figure 2.2-1b**).

Sub-Alternative Segment 9A

Similar to the Proposed Action, from the southern terminus of Segment 9B, the Action Alternative would deviate from the SWIP Utility Corridor and be routed along Segment 9A. The line would then rejoin Segment 9D and proceed to Segment 11. This sub-alternative would increase the distance of the Action Alternative by just over 2 miles, for a total length of 236 miles, similar to the Proposed Action.

Sub-Alternative Segment 10

From the southern terminus of Segment 8, the Action Alternative would deviate from the SWIP Utility Corridor and follow Segment 10 around the Delamar Mountains Wilderness Area and rejoin the SWIP Utility Corridor at the beginning of Segment 11. This sub-alternative would increase the distance of the Action Alternative by approximately 10 miles, for a total length of 244 miles.

2.4 No Action Alternative

NEPA regulations require the No Action Alternative to be included in the alternatives analysis of an EIS (40 CFR Part 1502.14(d)). Under the No Action Alternative, BLM would not approve the ROW; therefore the proposed transmission line, telecommunications facilities, and substation would not be constructed or operated as described in the Proposed Action or Action Alternative. The No Action Alternative would not be responsive to NV Energy's needs. The Robinson Summit Substation and the high-voltage transmission line would not be built, which would eliminate the ability to cost-effectively transport electricity and share power resources between the two service territories in northern and southern Nevada. The existing conditions and trends in the Project Area would continue (Chapter 3 - Affected Environment). The project purpose and need, as described in **Sections 1.2** and **1.3**, would not be met.

2.5 Alternatives Considered but Eliminated from Detailed Analysis

2.5.1 SWIP Utility Corridor

In areas where the Proposed Action deviates from the SWIP Utility Corridor, staying within the SWIP Utility Corridor itself was considered for the route, however some areas of the corridor (four areas along Segment 6C and Segment 9C) were eliminated due to topographical constraints in conjunction with the need to remain on the same side of (i.e. not cross over) and at an allowable distance from the existing GBT ROW. Topographic constraints included inaccessible mountain peaks, the steep sides of mountain ridges, and a wide portion of a reservoir. Locating the Proposed Action outside the SWIP Utility Corridor in some areas avoids these topographical constraints and significantly lessens the environmental impacts to construct, operate, and maintain the transmission facilities. Also, worker safety is greatly improved by avoiding high-risk work environments (e.g., crane operation on steep hillsides).

2.5.2 Westside Tie

There is a Section 368 corridor (#18-224) along the west side of Nevada that could be utilized as a transmission line route to connect the north and south service areas. A Westside Tie using the #18-224 corridor has been extensively reviewed. The power transmitted through a Westside Tie would need to reach the Harry Allen Substation in order to overcome system limitations and reach the major load center in the south. There currently are significant impediments to connecting at the Northwest Substation and building a 500 kV line to the Harry Allen Substation (e.g., permitting issues around the Desert National Wildlife Range, Conservation Transfer Area, and NV Energy's Northwest Substation). Assuming that environmental challenges associated with this alternative route could be surmounted, this would add approximately 160 to 180 miles to the route as it would thereby connect to the Las Vegas Valley load from the south, due to the above mentioned constraints, and therefore would add hundreds of millions of dollars to its costs. Costs of a Westside Tie would be significantly higher than the costs of the ON Line Project because of it would be a much longer route.

Further, because this line was not part of the original scope under the EEC Project this line would likely take an additional four to six years to construct beyond the schedule of the ON Line Project in order to conduct the necessary baseline studies, engineering, and a full environmental analysis.

The alternative of pursuing a transmission line in a new corridor along the western part of the state in lieu of the ON Line Project was eliminated for the following reasons:

- Uncertainty about the ability to permit a new corridor through or around sensitive areas
- Significantly higher costs associated with additional length of line
- Not part of the original scope under the EEC Project; therefore baseline studies, engineering, and analysis have not been completed
- Adds four to six years to schedule compared to ON Line Project

2.5.3 Purchase of Third Party Transmission Rights

NAC § 704.9355(c) requires that NV Energy include in its Transmission Plan transmission options that include the purchase of long-term transmission rights on transmission facilities owned by others. NV Energy has considered purchasing third party transmission rights as an alternative to the ON Line Project. Over the last thirty years, developers have proposed projects similar to the ON Line Project through eastern Nevada, including the Los Angeles Department of Water and Power's White Pine Power Project (WPPP), Idaho Power's Southwest Intertie Project (SWIP), Duke Energy and PG&E National Energy's White Pine Coal and Transmission Projects, GBT's Thirty Mile to Harry Allen Project, the multi-state proposed Frontier Project, TransCanada Zephyr, TransCanada Chinook, the original Northern Lights Project, and TransWest Express. Several projects are currently being proposed or have been approved in the original Idaho Power SWIP corridor, including:

- TransCanada's Zephyr Project (proposed)
- TransCanada's Chinook Project (proposed0
- GBT's Thirty Mile - Harry Allen or Eldorado Project (approved)

In most instances, third party purchase alternatives suffer from the following characteristics:

- Ownership rights (or ownership-like rights) are essential in order for NV Energy to utilize the interconnection as an internal resource, thereby realizing its joint dispatch and operational benefits
- The third-party projects announced to date are designed for long distance transmission across Nevada, not to exclusively serve Nevada customers
- No schedule advantages have been identified for any of these projects
- Based on publicly available information, no cost advantages were identified
- Long-haul transmission projects are exclusively subject to federal jurisdiction, leaving no role for state regulation
- Because the business model for third-party transmission projects is founded on subscriptions to transmission service rather than the need to serve load, there is no assurance that any of these projects will be built

In general, the third-party projects listed above follow a route along and/or within the SWIP Utility Corridor from Midpoint, Idaho (or other routes joining the SWIP) to southern Nevada and points beyond. The origination point(s), potential generation sources (first coal, then renewables), and termination point(s) have and continue to change, so detailed evaluation of such proposals is difficult. What is certain is that these projects are designed for long distance transmission of generating resources located in the Wyoming/Montana region (ample wind and coal resources) to load centers in the Southwest and California. Given the outright prohibition against sales of coal-fired resources into California, these projects must now rely largely on distant renewables for their economic justification.

Assuming that an alternative was economically justified for deliveries elsewhere, the use by NV Energy of a portion of the line(s) would create a bottleneck to long distance transmission and result in higher costs. Moreover, despite years of effort, project developers have not been able to obtain the subscription commitments required to undertake such projects. Without such commitments, such projects are not likely to get built by third party investors.

The TransCanada projects are proposed for 2014 in-service dates. However, the TransCanada projects are being proposed as three terminal Direct Current (DC) concepts, meaning there would be no ability for NV Energy to inject power at Ely without constructing an additional DC converter station (the estimated minimum cost of which is approximately $100 million). This incremental cost (over and above the cost of the transmission line) would make this alternative far less attractive than the ON Line Project. The 2014 in-service dates also are in question. Although FERC has approved a proposal by TransCanada for an anchor tenant and has authorized TransCanada's request to charge market-based rates for these projects, the permitting currently is not far enough along to accommodate these in-service dates. TransCanada held a bidders conference in Las Vegas in October 2009 seeking commitments for its projects. The results of this meeting on the project schedules are not known at this time.

All of the third-party transmission developers' proposals listed above present an additional drawback. These projects plan to link Montana, Wyoming, and Idaho to the Eldorado Valley. Any capacity sold to NV Energy for north to south delivery would create a pinch point north of Ely. For example, if NV Energy were to inject power into a north-south line at Ely for delivery south, transmission from the Midpoint – Ely segment must be reduced by that amount to avoid overloading the southern piece. To compensate for this reduced capacity to the south, the

project's proponents would have to adjust rates upward for all users, including NV Energy, or agree to reduce capacity for other southern portions of their new lines.

NV Energy has substantial, demonstrated transmission construction experience, a match of generation and load, specific need to move renewable generation intrastate, and a well defined schedule. Moreover, NV Energy has alliances in place with major manufacturers who can deliver equipment when needed to support the ON Line Project. An alternative to rely on others to construct the critical infrastructure necessary to deliver renewable energy into NV Energy's systems would not be reasonable and was therefore eliminated from further consideration.

NV Energy has been able to reach agreement with GBT under terms and conditions that reduced or eliminated the disadvantages of most third-party purchase alternatives. In April 2009, NV Energy made a proposal to GBT for the joint development and use of 500 kV transmission facilities along the SWIP corridor (Joint Project), utilizing the existing ROW authorization. The Joint Project is still subject to final or definitive agreements between the parties. Due to the uncertainty of agreement between the parties and review by the PUCN, NV Energy continues to pursue the separate ON Line Project in order to meet PUCN directives.

2.5.4 Buried Power Line

The option of burying the power line was considered. However, environmental impacts associated with trenching and burying a power line are much greater than placing a tower every ¼-mile. If a buried line fails, repairs normally take weeks to complete versus hours for an overhead line, resulting in prohibitive outage durations. Repair time is especially critical for a high-capacity system interconnection such as the proposed ON Line Project. Costs for burying power lines are in the range of 10 times the cost of an overhead line due to the high cost of cable, trenching and backfilling, environmental mitigation, etc. For this 500 kV line, the cost per mile could increase from $1.4 million per mile to over $10 million per mile, which would make the project economically infeasible from a business perspective. Also, a buried power line would be infeasible due to increased impacts.

2.6 Comparison of Alternatives and Summary of Impacts

2.6.1 Comparison of Alternatives

Table 2.6-1 below compares and summarizes the environmental impacts of the Proposed Action and Action Alternatives.

TABLE 2.6-1 COMPARISON SUMMARY OF IMPACTS FROM PROPOSED ACTION AND ACTION ALTERNATIVE

IMPACT		PROPOSED ACTION (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)	ACTION ALTERNATIVE (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9B, 9C, 9D, AND 11)	ACTION ALTERNATIVE (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, SUB-ALT 9A, 9B, 9D, AND 11)	ACTION ALTERNATIVE (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, SUB-ALT 10, AND 11)	ACTION ALTERNATIVE (INCLUDES SUB-ALT RSS-SITE B AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)
Water Resources						
Acreage of wetlands impacts	ST	0	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
	LT	0	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Number of perennial streams spanned		2	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Geology and Minerals						
Potential effects on topography		Minor	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Number of mining, oil, gas, and/or geothermal claims potentially impacted		0	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Paleontological Resources						
Potential to encounter paleontological resources		Low to High, depending on area Robinson Summit Substation area has high potential	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Soils						
Acreage Disturbed (short-term includes 200-foot ROW and proposed disturbance outside ROW)	ST	7,809	7,795	7,831	8,018	7,865
	LT	787	782	788	898	742
Air Quality						
Would NAAQS be exceeded?		No	No	No	No	No

IMPACT	**PROPOSED ACTION** (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)	**ACTION ALTERNATIVE** (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9B, 9C, 9D, AND 11)	**ACTION ALTERNATIVE** (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, SUB-ALT 9A, 9B, 9D, AND 11)	**ACTION ALTERNATIVE** (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, SUB-ALT 10, AND 11)	**ACTION ALTERNATIVE** (INCLUDES SUB-ALT RSS-SITE B AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)
Vegetation					
Five vegetation types with the most acreage permanently impacted, plus winterfat	• Creosote – 148 • Douglas rabbitbrush - 13 • Joshua Tree - 10 • Pinyon juniper - 22 • Wyoming/Black sagebrush - 134 • Winterfat - 7	• Creosote – 152 • Douglas rabbitbrush – 12 • Joshua Tree - 10 • Pinion-juniper – 24 • Wyoming/Black sagebrush – 137 Winterfat – 6	• Creosote – 152 • Douglas rabbitbrush – 12 • Joshua Tree - 10 • Pinion-juniper – 24 • Wyoming/Black sagebrush – 136 • Winterfat – 6	• Creosote – 95 • Douglas rabbitbrush – 12 • Joshua Tree - 35 • Pinion-juniper – 28 • Wyoming/Black sagebrush – 131 • Winterfat – 3	• Creosote -144 • Douglas rabbitbrush - 13 • Joshua Tree – 10 • Pinyon juniper - 18 • Wyoming/Black sagebrush – 107 • Winterfat - 7
Noxious and Non-native, invasive weed risk assessment	Low to moderate, depending on area Areas of moderate risk: Robinson Summit Substation, Segment 11	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Special status plant species observation locations that could be impacted	Segments 6C and 9B	Segments 6C, 9B, and 9C	Same as Proposed Action	Segment 6C	Same as Proposed Action
Wildlife Resources, Including Special Status Wildlife, Fisheries, and Aquatic Species					
Number of potentially occupied greater sage-grouse leks within 2 miles (includes active, inactive, and unknown leks)	5	8	8	8	8
Pygmy rabbit observation locations that could be impacted	Segment 6C	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Segment 6C, RSS-Site B Sub-Alt and access roads
Potential Kangaroo Mouse habitat that could be impacted	RSS, plus Segments 6C, 8, and 9B	Same as Proposed Action	Same as Proposed Action	RSS, plus Segments 6C, 8, and 10	RSS-Site B Sub-Alt, plus Segments 6C, 8, and 9B
Areas of pronghorn antelope range impacted	Segments 6C, 8, and 9B, excluding higher elevations	Same as Proposed Action	Same as Proposed Action	Segments 6C, 8, and north portion of 10, excluding higher elevations	RSS-Site B Sub-Alt, Segment 6C, 8, and 9B
Impacts to fisheries and aquatic resources	None to negligible	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Acres of desert tortoise habitat impacted long-term	434 acres	428 acres	Same as Proposed Action	480 acres	Same as Proposed Action

IMPACT	PROPOSED ACTION (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)	ACTION ALTERNATIVE (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9B, 9C, 9D, AND 11)	ACTION ALTERNATIVE (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, SUB-ALT 9A, 9B, 9D, AND 11)	ACTION ALTERNATIVE (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, SUB-ALT 10, AND 11)	ACTION ALTERNATIVE (INCLUDES SUB-ALT RSS-SITE B AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)
Areas of mule deer crucial winter range impacts	Portions of Segments 6C and 8	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Raptor nesting areas within 2 miles	Ferruginous hawk: Segment 6C and nest observations along Segment 8	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action, with additional nest observations along Segment 10	Ferruginous Hawk: RSS-Site B Sub-Alt (inactive nests), Segment 6C and nest observations along Segment 8
Range Resources					
Number of Grazing Allotments Impacted	28	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Number of Herd Management Areas (HMAs) Impacted	1	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Cultural Resources					
Number of and Additional Projected Acres of NRHP-Eligible Sites impacted	2 sites + 205 acres	2 sites + 198 acres	2 sites + 198 acres	12 sites + 152 acres	3 sites + 198 acres
Native American Concerns					
Number of Places of Cultural and/or Geographic Interest to Tribes potentially impacted	5	4	5	3	5
Land Use					
Long-term ROW acres of BLM lands for the project	5,789	5,790	5,834	6,028	5,863
Long-term ROW acres of private, state or other agency lands for the project	38	13	13	13	38
Special Designation Areas (SDAs)					
Number of SDAs with project components within their boundary	3	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Recreation					
Overall impact to recreation	Short-term, negligible to major Long-term, negligible to minor	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action

IMPACT		**PROPOSED ACTION** (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)	**ACTION ALTERNATIVE** (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9B, 9C, 9D, AND 11)	**ACTION ALTERNATIVE** (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, SUB-ALT 9A, 9B, 9D, AND 11)	**ACTION ALTERNATIVE** (INCLUDES ROBINSON SUMMIT AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, SUB-ALT 10, AND 11)	**ACTION ALTERNATIVE** (INCLUDES SUB-ALT RSS-SITE B AND FALCON SUBSTATIONS, AND SEGMENTS 6C, 8, 9A, 9B, 9D, AND 11)
Visual Resources						
Developments potentially not consistent with BLM Visual Resource Management Classification designation		None	Same as Proposed Action	Same as Proposed Action	Segment 10	Same as Proposed Action
Noise						
Noise impacts to nearest residence	ST	Minor	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
	LT	Negligible	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Socioeconomics						
Peak fiscal impact to local government	ST	Sales Tax Revenue - Major	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
	LT	Property Tax Revenue - Minor	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Employment	ST	Moderate	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
	LT	None	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Environmental Justice						
Disproportionate effects to minority or low income populations		None to negligible	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Hazardous Materials and Solid Waste						
Anticipated environmental effects from use of hazardous materials		Negligible	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
Transportation						
Impacts to transportation	ST	Minor to moderate	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action
	LT	Negligible	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action

2.7 Monitoring and Mitigation

2.7.1 Water Resources

Additional mitigation measures are not required.

2.7.2 Geology and Minerals

Additional mitigation measures are not required.

2.7.3 Paleontological Resources

1. Paleontologists may make the determination, based on accumulation of information being learned from inspection and the evaluation of spoil piles and previous grading within areas of high sensitivity, that areas formerly determined high potential are actually low or undetermined where monitoring may be reduced.
2. Upon encountering scientifically significant paleontological resources, salvage of bone will be conducted with additional field staff and in accordance with modern paleontological techniques.
3. Fossils collected during the project will be prepared to a reasonable point of identification.
4. A report documenting the results of the monitoring and salvage activities and the significance of the fossils will be prepared.
5. Fossils collected during this work, along with the itemized inventory of these specimens, will be deposited in a museum repository for permanent curation and storage.

2.7.4 Soils

1. Ensure that soils are salvaged and there is placement of growth medium on sites ready for immediate reclamation to minimize the need for stockpiling the material. The underlying subsoil material will remain in place or be used elsewhere.
2. Design access roads to fit the terrain by avoiding unstable slopes and highly erodible conditions to the extent practicable to protect soils and prevent excessive sedimentation. These protective measures include, but are not limited to, mulch, matting, or slope length shortening (State of Nevada 1994).
3. When soils are wet, construction, operation, and maintenance activities will be restricted so as to properly support construction or maintenance equipment (i.e., when heavy equipment creates ruts in excess of 4 inches deep over a distance of 100 feet or more in wet or saturated soils). This standard will not apply in areas with silty soils, which easily form depressions even in dry weather. Where the soil is deemed too wet, one or more of the following measures will apply:
    - Re-route all construction or maintenance activities around the wet areas so long as the route does not cross into sensitive resource areas.
    - If wet areas cannot be avoided, implement BMPs for use in these areas during construction and improvement of access roads, and their subsequent reclamation. This includes use of wide-track or balloon-tire vehicles and equipment, or other weight dispersing systems approved by the appropriate

resource agencies. It also may include use of geotextile cushions, pre-fabricated equipment pads, and other materials to minimize damage to the substrate where determined necessary by resource specialists.

- Limit access of construction equipment to the minimum amount feasible, remove and separate topsoil in wet or saturated areas and stabilize subsurface soils with a combination of one or more of the following: grading to dewater problem areas, utilize weight dispersion mats, and maintain erosion control measures such as surface filling and back-dragging. After construction is complete, re-grade and re-contour the area, replace topsoil, and reseed to achieve the required plant densities.

4. Vegetation will be cleared and the construction ROW will be graded only to the extent necessary. Vegetation within the ROW will be cut or scraped at or near the ground level. Except for the area to be excavated, the vegetative root system and subsurface soils will be left intact to the greatest extent practicable. This will help stabilize the soils within the ROW during construction. ROW boundaries will be clearly staked or flagged and no disturbances are allowed beyond the limits.

2.7.5 Air Resources

1. Construction staging areas will not be placed within 500 feet of residences.
2. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard, which is the distance from the top of the truck bed in the material being hauled.
3. Sweep streets of visible soil material carried onto adjacent paved public streets.

Mobile and Stationary Source Controls:

1. Reduce construction-related trips of workers and equipment, and unnecessary idling from heavy equipment.
2. Prohibit any tampering with engines to increase horsepower, and require continuing adherence to manufacturer's recommendations.
3. If practicable, lease new, clean equipment meeting the most stringent of applicable Federal or State Standards.
4. Require low sulfur diesel fuel (15 parts per million), if available.
5. Locate diesel engines, motors, and equipment as far as possible from residential areas and sensitive receptors (schools, daycare centers, and hospitals).

2.7.6 Vegetation, Including Noxious and Non-Native, Invasive Weeds and Special Status Plants

1. Safely store salvageable cacti and yucca in temporary plant storage sites; plant salvage from areas of permanent disturbance will be moved once, and replanted during revegetation/reclamation activities.
2. Site-specific and targeted special status plant surveys will be conducted during the appropriately timed survey window, prior to final siting of electric transmission line structures and temporary use areas. If communities of special status plant species are present at a given structure location or temporary use area, all efforts to relocate that

structure or temporary use area will be made to avoid such plants to the extent practicable. If relocating a specific structure or temporary use area is not feasible due to operational constraints and requirements, the individuals and/or community of special status plants to be impacted will be transplanted to an approved location through appropriate and close coordination with the BLM.

3. Locate temporary use areas at least 0.5 mile away from winterfat dominated sites whenever reasonable. Where reasonable, strive to locate temporary access roads outside winterfat dominated sites.
4. In portions of the project area adjacent to populations of Las Vegas buckwheat, new long-term disturbance would consist only of the centerline access road and ground-level structure foundation and anchor areas. All other disturbance (e.g., wire stringing sites and other staging and temporary use areas) would be limited to within the existing SWIP Utility Corridor.
5. If the RSS-Site alternative location is selected, NV Energy will close off and reclaim an existing two-track road that currently is situated within a large winterfat vegetation community to the north of the proposed new access road for the RSS-Site B sub-alternative location. This mitigation will help reduce future impacts to this winterfat vegetation community and allow this area to naturally restore itself.

2.7.7 Wildlife, Including Special Status Wildlife, Migratory Birds, Fisheries, and Aquatic Species

<u>1. Banded Gila Monster Mitigation Measures</u>

Banded Gila monsters can occur within the southern portion of the Project Area in southern Lincoln and northern Clark Counties. Measures provided by NDOW in a November 1, 2007 publication entitled *Gila Monster Status, Identification and Reporting Protocol for Observations* will be followed by the Proponent and their private contractors so as to minimize impacts on the Gila monster associated with the ON Line Project:

- Live Gila monsters found in harm's way on the construction site will be captured and then detained in a cool, shaded environment (<85°F) by the project biologist or equivalent personnel until a NDOW biologist can arrive for documentation, marking, and obtaining biological measurements and samples prior to releasing. Despite the fact that a Gila monster is venomous and can deliver a serious bite, its relatively slow gate allows for it to be easily coaxed or lifted into an open bucket or box carefully using a long handled instrument such as a shovel or snake hook (*Note: it is not the intent of NDOW to request unreasonable action to facilitate captures; additional coordination with NDOW will clarify logistical points*). A clean 5-gallon plastic bucket with a secure, vented lid; an 18"x 18"x 4" plastic sweater box with a secure, vented lid; or, a tape-sealed cardboard box of similar dimension may be used for safe containment. Additionally, written information identifying the mapped capture location, Global Positioning System (GPS) coordinates in Universal Transverse Mercator (UTM) using the North American Datum (NAD) 83 Zone 11. Date, time, and circumstances (e.g. biological survey or construction) and habitat description (vegetation, slope, aspect, substrate) will also be provided to NDOW.
- Injuries to Gila monsters may occur during excavation, blasting, road grading, or other construction activities. In the event a Gila monster is injured, it should be transferred to a veterinarian proficient in reptile medicine for evaluation of appropriate treatment.

Rehabilitation or euthanasia expenses will not be covered by NDOW. However, NDOW will be immediately notified of any injury to a Gila monster and which veterinarian is providing care for the animal. If an animal is killed or found dead, the carcass will be immediately frozen and transferred to NDOW with a complete written description of the discovery and circumstances, date, time, habitat, and mapped location (GPS coordinates in UTM using NAD 83 Z 11).

- Should NDOWs assistance be delayed, biological or equivalent acting personnel on site should detain the Gila monster out of harm's way until NDOW personnel can respond. The Gila monster should be detained until NDOW biologists have responded. Should NDOW not be immediately available to respond for photo-documentation, a digital (5 megapixle or higher) or 35mm camera will be used to take good quality images of the Gila monster in situ at the location of live encounter or dead salvage. The pictures will be provided to NDOW along with specific location information including GPS coordinates in UTM using NAD 83 Z 11, date, time, and habitat description. Pictures will show the following information: (1) Encounter location (landscape with Gila monster in clear view); (2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster should fill camera's field of view and be in sharp focus); (3) a clear, overhead close-up of the head (head should fill camera's field of view and be in sharp focus).

2. Avian Wildlife Mitigation Measures

For a complete list of protected birds see 50 C.F.R. 10.13.

A. Greater Sage-Grouse

In order to minimize the possibility of disruption of mating strategies of greater sage-grouse, the Proponent will employ the following:

- No construction activities will occur during the period from March 1 through May 15 within two miles of active greater sage-grouse leks. However, construction traffic can proceed through the area during this period, outside the 0.25 mile no surface occupancy area around leks, except from 2 hours before sunrise until 10:00 am.
- Modified tower design, including H-frame structures and perch deterrents, will be used in locations within two miles of known active leks and in areas of combined nesting, wintering, and summer brooding habitat. The final placement of modified structures would be determined based on current data and identified in the COM Plan. Within identified winter habitat, site specific surveys may be conducted to confirm winter use and habitat.

B. Migratory Birds

- Land disturbing construction and vegetation clearing activities will be scheduled outside of the breeding season (March 15 through July 30 - in upland desert habitats and ephemeral washes containing upland species and March 1 through August 30 - in riparian and higher elevation areas). Where construction is required during the breeding season, the area impacted will be surveyed for nests prior to construction. If no nests are found, construction could proceed. Project area surveys will be done to ensure 100 percent coverage. Methods will be selected based on the plant community and/or topography. Field notes and reports will thoroughly describe methodology and rationale for use and archived.

- If active migratory bird nests (i.e., containing eggs or young, or a mated pair is observed exhibiting territorial defense, carrying nesting material, and/or transporting food) are encountered during the surveys, land disturbing construction activities will be avoided while the birds are allowed to fledge. An appropriate construction avoidance buffer area, to be determined for the species and in conjunction with the USFWS and BLM, will apply to all active nests for migratory bird species.
- Gaps or narrow open hollow spaces in the proposed facilities or structures capable of trapping cavity-nesting birds will be inspected and closed, if necessary to prevent unintentional take of migratory birds. In addition, open-ended posts will also be inspected and capped and any holes towards the top of a hollow post would be filled, as necessary.

C. Western Burrowing Owls and Ground Nesting Species

- Surveys are to include burrowing owls and other ground nesting species. Surveys would be conducted following the California Burrowing Owl Consortium's survey protocol. If active nests containing eggs and/or young were to be found, then an appropriately-sized buffer area will be established (minimum of 250 feet), marked and avoided during construction so that egg laying, incubation, and the rearing of young continues until such time as the young fledge.
- For construction activities from October 1 to March 14, the wildlife biologist will collapse all burrows, holes, crevices, or other cavities on the construction site only after thoroughly inspecting them for inhabitants, in accordance with agency protocols. This will discourage burrowing owls from potentially occupying the burrows, holes, crevices before and during construction activities. Any burrowing owl burrows collapsed as a result of pre-construction activities will be reconstructed after construction activities are complete.
- If burrowing owls are observed during surveys after March 15, the wildlife biologist will be notified. The wildlife biologist will rely on behavioral observations to determine their breeding status. Should breeding behavior be observed, the wildlife biologist assumes that an active nest is present and the area will be avoided until the young fledge. This ensures that any eggs or young are not abandoned due to project activities. The owl's total nesting cycle takes a minimum of 74 days, during which time construction activity needs to cease within the buffer area on the site. Generally, owl eggs may be laid between mid-March to the end of May, and young may be present from mid-April through August. (Adapted from USFWS recommendations.)

D. Raptors

- Raptor nests within the project area will be identified during pre-construction surveys for migratory and ground-nesting birds. All active raptor nests will be avoided. Known raptor nest sites need to be checked two to five days prior to construction activities in a given area. If an active raptor nest site is discovered, construction activities will be restricted within 0.5 miles of the active nest site from May 1 through July 15.
- NV Energy will continue to fully implement and adhere to its existing Avian Protection Plan (APP). This existing plan addresses permit compliance (USFWS and NDOW), construction and modification design standards, and avian mortality reporting and protocols. A specific APP for the ON Line Project is currently being prepared by NV Energy and will be included as an appendix in the overall APP (NV Energy 2010).

Concurrence from the USFWS on the specific APP for the ON Line Project will be obtained prior to project implementation and will be included as a condition of the ROW grant.

3. Pygmy Rabbit

- If pygmy rabbit areas are discovered during pre-construction surveys or natal burrows are found, new disturbance will not occur within 200 feet of the areas, when feasible. If not feasible, direct disturbance of burrows will be avoided unless the burrow can be determined to be inactive. This determination will be made by a BLM biologist.

4. Kangaroo Mouse

- For areas of proposed surface disturbance, within identified, potentially suitable habitat, and where evidence (i.e. burrows) of small mammals are present for the kangaroo mouse, site-specific trapping to determine the presence/absence and potentially relocate individual kangaroo mice will be conducted in consultation with the BLM biologist.

5. Big Game Mitigation Measures

- Within the BLM Southern Nevada District, construction activities will be restricted within occupied desert bighorn sheep habitat from March 1 through May 31 and from July 1 through August 31.

2.7.8 Range

Acres of temporary disturbance (i.e. temporary stage areas, wire-pulling sites, etc.) during construction should be minimized in the Geta soils, within the Grapevine Allotment (Segment 10), to minimize disturbance within these highly productive soils for range forage.

2.7.9 Cultural Resources

Additional mitigation measures are not required.

2.7.10 Native American Concerns

Additional mitigation measures are not required.

2.7.11 Land Use and Realty

Additional mitigation measures are not required.

2.7.12 Special Designations

Additional mitigation measures are not required.

2.7.13 Recreation

Construction schedules will be coordinated with permitted recreation activities to avoid conflicts.

2.7.14 Visual

Additional mitigation measures are not required.

2.7.15 Noise

Construction staging areas will be placed no closer than 500 feet of residences. The schedule for all project construction activity is to preclude the use of heavy equipment, including those with the largest construction noise producing capability, between 10 PM and 7 AM within 2 miles of sensitive receptors.

2.7.16 Socioeconomics

Additional mitigation measures are not required.

2.7.17 Environmental Justice

Additional mitigation measures are not required.

2.7.18 Hazardous & Solid Waste

Additional mitigation measures are not required.

2.7.19 Transportation

NV Energy will coordinate with NDOT and utilize proper signage and traffic controls to avoid potential impacts to roadway conditions due to construction of the ON Line Project.

2.8 Preferred Alternative

The BLM has identified an Agency Preferred Alternative which is a combination of components from both the Proposed Action and Action Alternative. It includes:

- Proposed Action Transmission Line Route (Segment 6C, 8, 9B, 9A, 9D, and 11)
- Falcon Substation Expansion
- Action Alternative, Sub-Alternative RSS-Site B, including access roads and 345 kV loop-ins to existing Falcon-Gonder transmission line
- Harry Allen Substation Expansion

The following table (**Table 2.8-1**) summarizes the environmental impacts of the Agency Preferred Alternative that can be compared to the Proposed Action and Action Alternative environmental impacts comparison table, **Table 2.6-1**.

TABLE 2.8-1 SUMMARY OF ENVIRONMENTAL IMPACTS OF THE AGENCY PREFERRED ALTERNATIVE

IMPACT		AGENCY PREFERRED ALTERNATIVE (INCLUDES SUB-ALT RSS-SITE B AND FALCON, SUBSTATION, PROPOSED ACTION TRANSMISSION LINE ROUTE SEGMENTS 6C, 8, 9B, 9A, 9D, AND 11)
Water Resources		
Acreage of wetlands impacts	ST	0
	LT	0
Number of perennial streams spanned		●
Geology and Minerals		
Potential effects on topography		Minor
Number of mining, oil, gas, and/or geothermal claims potentially impacted		0
Paleontological Resources		
Potential to encounter paleontological resources		Low to High depending on area; RSS-Site B Sub-Alt has low potential to encounter paleontological resources
Soils		
Acreage Disturbed (short-term includes 200-foot ROW and proposed disturbance outside ROW)	ST	7,826
	LT	741
Air Quality		
Would NAAQS be exceeded?		No
Vegetation		
Five vegetation types with the most acreage permanently impacted, plus winterfat		• Creosote -148 • Douglas rabbitbrush - 13 • Joshua Tree – 10 • Pinyon juniper - 18 • Wyoming/Black sagebrush – 78 • Winterfat - 7
Noxious and Non-native, invasive weed risk assessment		Low to Moderate; Segment 11 has Moderate Risk
Special status plant species observation locations that could be impacted		Segments 6C and 9B
Wildlife Resources, Including Special Status Wildlife, Fisheries, and Aquatic Species		
Number of potentially occupied greater sage-grouse leks within 2 miles (includes active, inactive, and unknown leks)		5
Pygmy rabbit observation locations that could be impacted		RSS-Site B Sub-Alt, including access roads and Segment 6C
Potential Kangaroo Mouse habitat that could be impacted		RSS-Site B Sub-Alt, plus Segments 6C, 8, and 9B
Areas of pronghorn antelope range impacted		RSS-Site B Sub-Alt, Segments 6C, 8, and 9B, excluding higher elevations
Impacts to fisheries and aquatic resources		None to negligible
Acres of desert tortoise habitat impacted long-term		434 acres
Areas of mule deer crucial winter range impacts		Portions of Segment 6C and 8
Raptor (including eagles) nesting areas within 2 miles		Ferruginous Hawk: RSS-Site B Sub-Alt (inactive nests), Segment 6C, and Segment 8 (nest observations)
Range Resources		
Number of Grazing Allotments Impacted		28
Number of Herd Management Areas (HMAs) Impacted		1
Cultural Resources		
Number of and Additional Projected Acres of NRHP-Eligible Sites impacted		3 sites + 205 acres

IMPACT		AGENCY PREFERRED ALTERNATIVE (INCLUDES SUB-ALT RSS-SITE B AND FALCON, SUBSTATION, PROPOSED ACTION TRANSMISSION LINE ROUTE SEGMENTS 6C, 8, 9B, 9A, 9D, AND 11)
Native American Concerns		
Number of Places of Cultural and/or Geographic Interest to Tribes potentially impacted		5
Land Use		
Acres of BLM lands affected by the project		5,854
Acres of private, state or other agency lands affected by the project		38
Special Designation Areas (SDAs)		
Number of SDAs with project components within their boundary		3
Recreation		
Overall impact to recreation	ST	Negligible to Minor
	LT	Negligible to Minor
Visual Resources		
Developments potentially not consistent with BLM Visual Resource Management Classification designation		None
Noise		
Noise impacts to nearest residence	ST	Minor
	LT	Negligible
Socioeconomics		
Peak fiscal impact to local government	ST	Sales Tax Revenue – Major
	LT	Property Tax Revenue – Minor
Employment	ST	Moderate
	LT	None
Environmental Justice		
Disproportionate effects to minority or low income populations		None to Negligible
Hazardous Materials and Solid Waste		
Anticipated environmental effects from use of hazardous materials		Negligible
Transportation		
Impacts to transportation	ST	Minor to Moderate
	LT	Negligible

Chapter 3

Affected Environment

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Chapter 3
Affected Environment

3.1 Introduction

This chapter describes the existing conditions of the physical, biological, cultural, and socioeconomic resources that have the potential to be affected by activities related to the Proposed Action and Action Alternative (including sub-alternatives) discussed in Chapter 2. These resources include those that occur within, are adjacent to, or associated with the project area (i.e., Proposed Action and Action Alternative footprints including areas for both short-term and long-term ROWs), as well as those identified during the scoping process (**Section 1.13**) and BLM Interdisciplinary Team review.

3.2 Water Resources

This section describes water resources that may be affected by project activities within the areas described in **Section 2.2.1**, generally ranging from White Pine County south through Nye and Lincoln counties, and terminating northeast of Las Vegas in Clark County. Water-related resources evaluated in this section include water quality and surface water features such as perennial, intermittent, and ephemeral streams; wetland areas; and floodplains. There are no springs within the project area and no project activities are proposed that would have direct or indirect effects on springs. Potential groundwater effects, such as aquifer contamination, would be mitigated through environmental protection measures as described in **Section 2.2.2** and impacts to water rights would similarly be mitigated or not affected by project activities; therefore, these resources are not discussed further in this section or in Chapter 4.

3.2.1 Area of Analysis

The area of analysis (i.e., project area) for the Proposed Action and Action Alternative transmission line alignments and ancillary facilities extends from Robinson Summit (west of Ely and near the northern end of Jakes Valley) to the existing Harry Allen Substation in Clark County (northeast of Las Vegas). A small area associated with the expansion of the existing Falcon Substation (located in Boulder Valley, Eureka County) is also included in the area of analysis.

The project area from Robinson Summit to Las Vegas is located within the Central and Colorado River Basin Hydrographic Regions, according to the Nevada Division of Water Resources (NDWR), Department of Conservation and Natural Resources (NDWR 2006). Robinson Summit Substation and the RSS-Site B sub-alternative are located within the Jakes Valley watershed in the Central Region. Segment 6C begins in the Jakes Valley watershed in the Central Region, crosses into the White River Valley in the Colorado River Basin Region, and then returns to the Central Region just east of Silver King Pass. Segment 8 is wholly located within the Central Region, within the Dry Lake and Delamar Valleys, and Segment 9B is also located within the Central Region in Delamar Valley. Segments 9A and 9C are split between the Delamar Valley side of the Central Region (to the northeast) and the Pahranagat Valley side of the Colorado River Basin Region (to the southwest), across the foothills of the Delamar Mountains, while Segment 9D occurs within the Colorado River Basin Region, within Coyote Spring Valley. The northernmost one-third of sub-alternative Segment 10 occurs within the Central Region, transitioning to the Colorado River Basin Region after crossing the Delamar

Mountains for the southern two-thirds. Segment 11 is wholly located within the Colorado River Basin Region. The Falcon Substation is located within the Humboldt River Basin Region.

3.2.2 Data Sources and Methodology

Existing conditions were evaluated for the areas of analysis described in **Section 3.2.1** through a combination of literature research and field data collection.

3.2.3 Existing Conditions

Baseline water resources field data collection included wetlands and waters of the United States surveys for the northern parts of the analysis area, while existing data was reviewed for other drainages, floodplain/special flood hazard areas, and water rights for the southern parts of the analysis area. Field data was collected in spring and early summer 2007.

3.2.3.1 Precipitation

Precipitation in the area of analysis falls in the form of rain and snow, with the majority occurring near the northern end and steadily decreasing toward the southern end. According to the Western Regional Climate Center (WRCC 2009), average annual rainfall near the northern terminus of the area of analysis (at the Kimberly monitoring station) is 13.15 inches and average annual snowfall is 91.5 inches, while the southern end averages 5.55 inches of rain and 1.0 inches of snow annually (at the Boulder City monitoring station). **Section 3.6.3.1** contains additional climate information.

3.2.3.2 Surface Water

Surface water features, including streams, other drainages, and wetlands are shown in **Figures 3.2-1a** through **3.2-1d**. Streams and other drainages are discussed here, while wetlands and floodplains are discussed in additional detail in **Sections 3.2.3.3** and **3.2.3.4**, respectively.

Streams and Other Drainages

Stream systems within the area of analysis range from the large, perennial White River to both large and small intermittent/ephemeral drainages spread throughout the project area from Robinson Summit south to the Harry Allen Substation (**Figures 3.2-1a-d**). Segment 6C crosses the White River twice—once near its headwaters, and then again to the south of the Kirch Wildlife Management Area (WMA). The White River is discussed in additional detail in **Section 3.2.3.3** below.

According to the BLM Nevada State Office of Mapping Sciences, there are no perennial streams within the area of analysis in Nye, Lincoln, or Clark counties. The transmission line alignment crosses several large, named ephemeral drainages, including Jakes Wash in White Pine County (Segment 6C); Big Spring Wash in Nye County (Segment 6C); and Bailey, Silverhorn, Fairview, Porphyry, Red Rock, Cottonwood, Monkeywrench, Helen, Cedar, Kane Springs, and Pahranagat washes in Lincoln County (Segments 8, 9D, 10, and 11). Many of these washes discharge to the closed-basin valleys, except for Kane Springs and Pahranagat washes. Kane Springs Wash discharges to Pahranagat Wash, which in turn discharges to the Muddy River approximately 25 miles southeast of the SWIP Utility Corridor crossing location.

Additionally, a number of smaller, unnamed intermittent/ephemeral drainages are present throughout the project area.

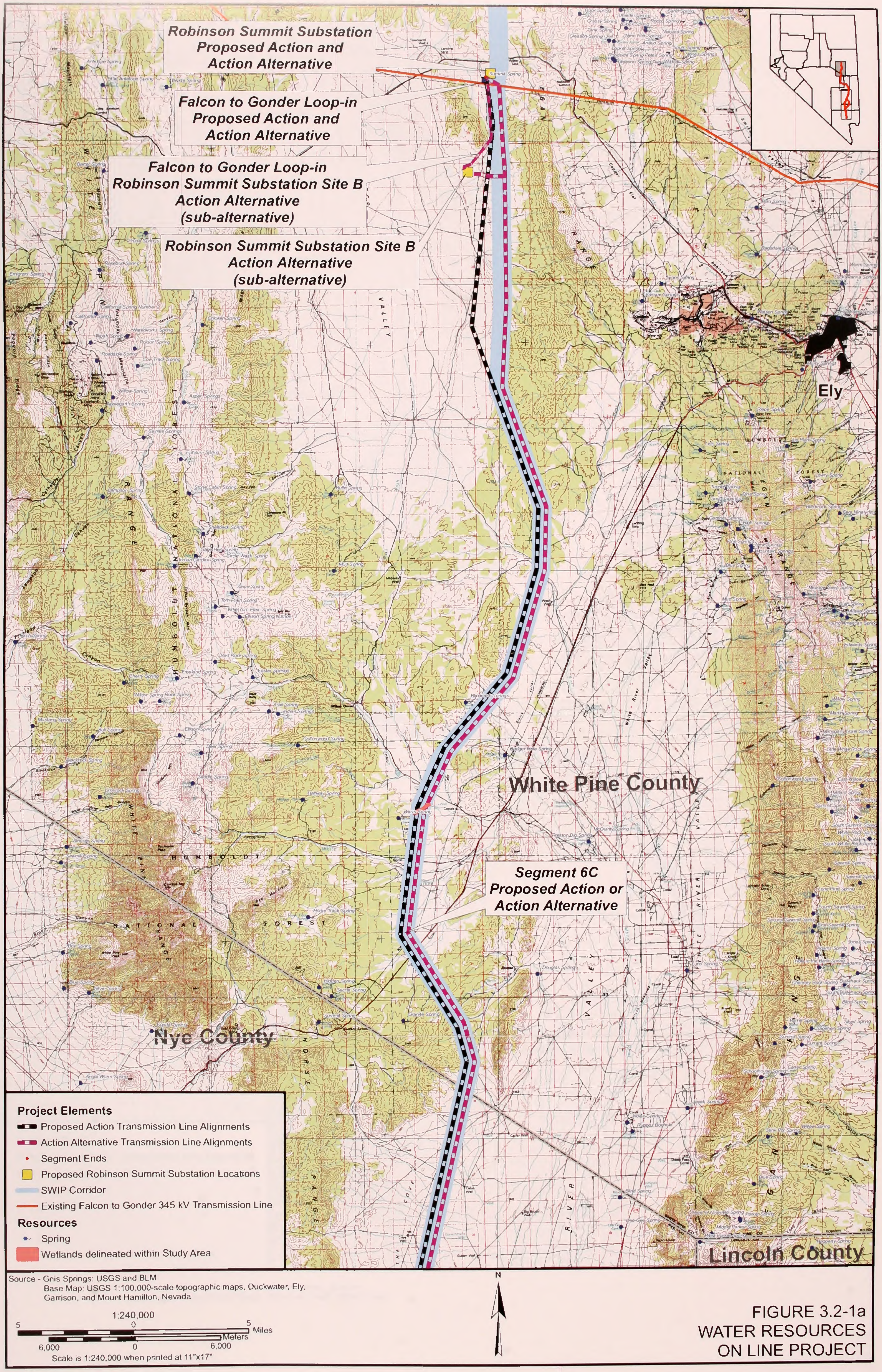


FIGURE 3.2-1a
WATER RESOURCES
ON LINE PROJECT

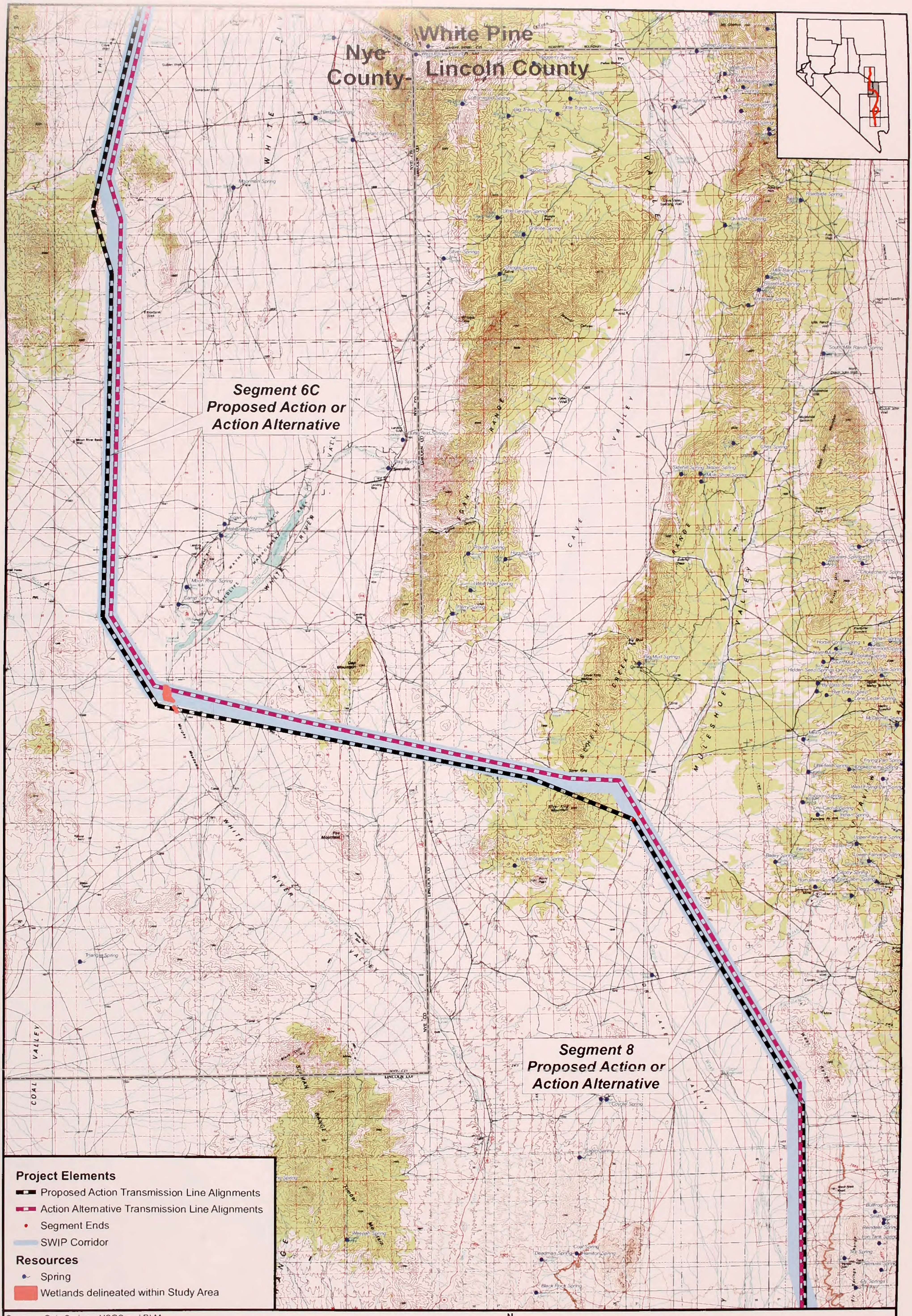


FIGURE 3.2-1b
WATER RESOURCES
ON LINE PROJECT

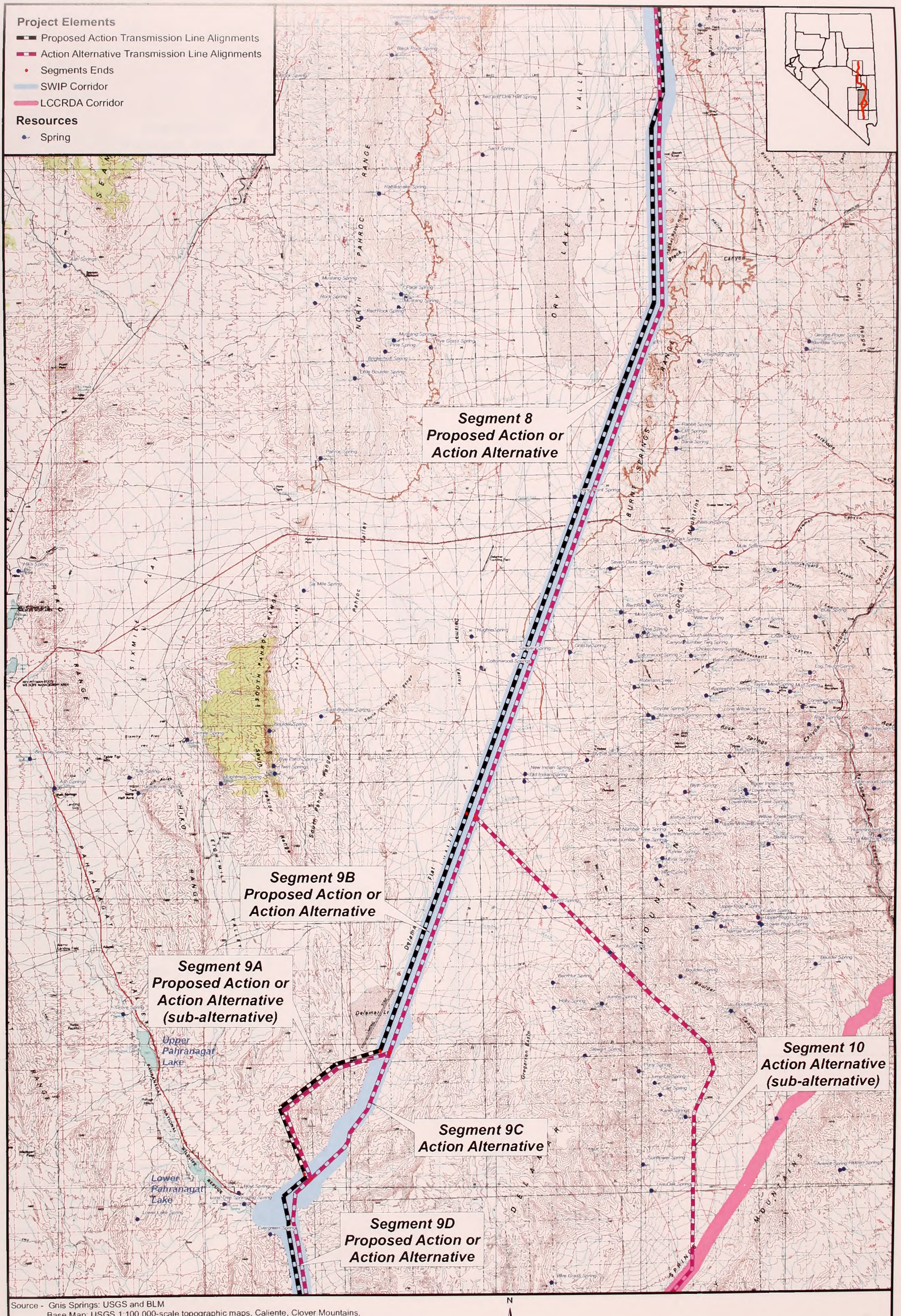
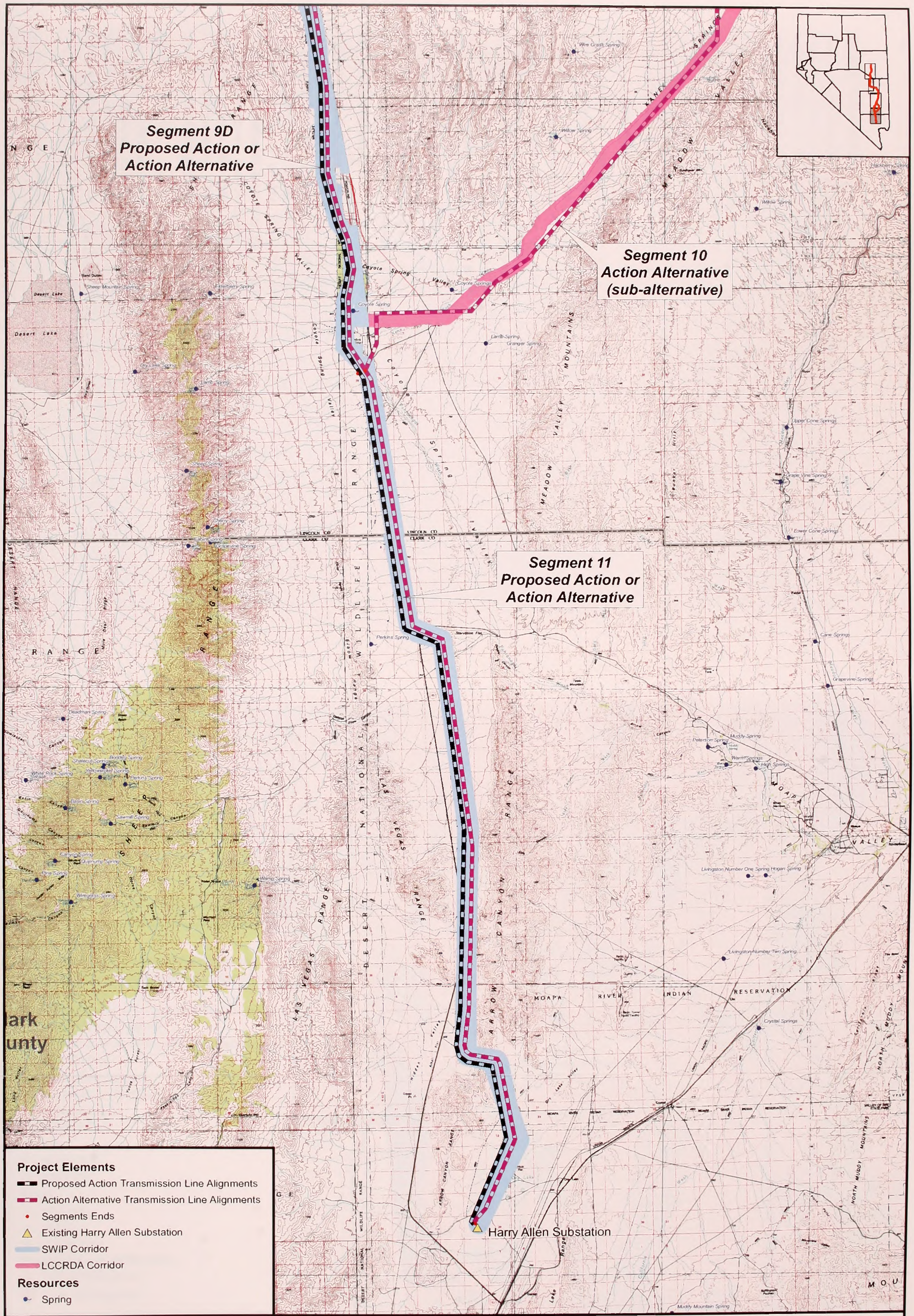


FIGURE 3.2-1c
WATER RESOURCES
ON LINE PROJECT



Source - Gnis Springs: USGS and BLM
Base Map: USGS 1:100,000-scale topographic maps, Clover Mountains, Indian Springs, Lake Mead, Las Vegas, Overton and Pahranagat, Nevada

1:240,000
5 0 5 Miles
6,000 0 6,000 Meters
Scale is 1:240,000 when printed at 11"x17"

FIGURE 3.2-1d
WATER RESOURCES
ON LINE PROJECT

Surface Water Quality

The Robinson Summit Substation and the RSS-Site B sub-alternative are not near any 303(d) listed waterbodies (impaired waters not meeting state water quality standards as defined by Section 303(d) of the federal Clean Water Act). The transmission line encounters no 303(d) listed waterbodies in White Pine, Nye, or Lincoln counties. The closest 303(d) listed waterbody is the source of the Muddy River, in Clark County. Segment 11 runs within eleven miles of the Muddy River (NDEP 2006). Pollutants or stressors of concern for the reach of the Muddy River from its source to Glendale are listed as total iron, temperature, total phosphorous, and dissolved oxygen (NDEP 2006). No source for these impairments has been designated by NDEP, which has contested the phosphorous standard applied by EPA, due to naturally occurring phosphorous in the local geology, such as carbonate rocks (NDEP 1998). The Pahranagat Wash, which is crossed by the transmission line alignment, is a tributary to this reach of the Muddy River, and the crossing location is upstream of the Muddy River.

3.2.3.3 Wetlands and Waters of the U.S.

The transmission line alignments, the Robinson Summit Substation, the RSS-Site B sub-alternative, and the Falcon Substation expansion area were evaluated for the presence of wetlands and waters of the U.S. by JBR (2007a, 2009, 2010). A detailed delineation of the extent of washes south of the White River was not conducted for the SWIP Utility Corridor or the Segment 10 sub-alternative route, as no permanent disturbance of these features is anticipated. The transmission line would be designed to span any drainage areas, and structures would not be placed in any wash. To the greatest extent possible, existing roads and crossing locations would be used during the construction phase and for periodic maintenance. Proposed access roads and potential drainage crossings for construction activities would be evaluated and finalized in the COM plan. The Pahranagat Wash and connected features may be considered waters of the U.S. by virtue of their downstream connection with the Muddy River, a traditionally navigable waterway; however, a significant nexus test was not conducted due to the project design for avoidance of impacts to any of these drainages. It is unlikely that any of the ephemeral features draining to closed-basin valley bottoms would be considered jurisdictional.

Regulatory Framework

Waters of the U.S. are defined as all waters which are used in interstate or foreign commerce, including wetlands, as well as intrastate lakes, rivers, streams, wetlands, etc., whose degradation or destruction could affect interstate or foreign commerce (33 CFR 328.3). Wetlands, as defined in 40 CFR 230.3 and 33 CFR 328.3, may be jurisdictional if they are adjacent to waters of the U.S. The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are "adjacent wetlands." In the absence of adjacent wetlands, the limits of federal jurisdiction extend to the ordinary high water mark (OHWM) (Corps 2005). The US EPA and United States Army Corps of Engineers (Corps) are tasked with regulating waters of the U.S., including wetlands.

Waters of the U.S.

The presence and extent of waters of the U.S. within the survey area was determined by assessing channels in the area for the presence of a defined bed and bank channel, and, particularly, the presence of an OHWM. The presence of an OHWM provides an indication that a channel conveys water on a regular basis. Regulatory Guidance Letter (RGL) 05-05 provides additional guidance to Corps districts in making OHWM determinations.

Wetlands

The location and extent of wetlands in the survey area was determined following the procedures outlined in the Corps' Technical Report Y-87-1, *Corps of Engineers Wetland Delineation Manual* (Corps 1987), referred to as "the Manual". Representative locations in potential wetland vegetation types present in the survey area were examined for wetland characteristics in accordance with the criteria contained in the Manual. Sample sites were established in each hydrophytic plant community in the area. Sites in adjacent vegetation communities or at boundaries of community types were also examined. At each site, the vegetation, soils, and hydrology were examined for wetland characteristics.

Findings

Prior to the field investigation, the National Wetlands Inventory (NWI) mapping compiled for the entire project area was reviewed. Areas of interest identified in the pre-field review were then visited and were surveyed for potential wetlands and waters of the U.S.

Waters of the U.S.

White River

Segment 6C would cross the White River channel near the river's headwaters and again below the Kirch WMA. Because water diverted from the White River is used to support agriculture, and flows through the Kirch WMA (a site that may support interstate recreational use), the White River and its adjacent wetlands and defined channel tributaries may also be subject to jurisdiction under the CWA.

In addition to the White River itself, Segment 6C would also cross two defined tributary channels, Jakes Wash and Ellison Creek. The transmission line would cross Jakes Wash in Section 4, T14N, R61E. Jakes Wash at this location is deeply incised, and includes a 5-foot wide defined channel. The channel is bordered by big sagebrush (*Artemisia tridentata*), rubber and green rabbitbrush (*Ericameria nauseosa* and *E. viscidiflora*, respectively), greasewood (*Sarcobatus vermiculatus*), and some wild rose (*Rosa woodsii*).

To the south, Segment 6C would cross Ellison Creek in Section 22, T13N, R60E. The drainage includes a poorly defined 3-foot-wide north branch and a more deeply incised 4-foot wide south branch. The two branches join above a road located within the Segment 6C study area. To the south, the transmission line would cross a channel that conveys flows to the Ellison Creek channel from the southwest. This channel, which would be crossed in Sections 27 and 28, T13N, R60E, supports a well-developed stringer of wetland vegetation, and is described under Wetlands, below.

Segment 6C would cross the upper reaches of the White River in Sections 9 and 10, T12N, R60E. The approximately 8-foot-wide flowing channel supports a limited fringe of hydrophytic vegetation, but is bordered by a 20- to 40-foot-wide riparian community that includes sandbar willow (*Salix exigua*) and skunkbush sumac (*Rhus trilobata*) above a road crossing.

Other Areas

No drainages meeting the criteria described above were observed in the vicinity of the Falcon Substation expansion, and only drainages connected to Pahranagat Wash system are likely to be potentially jurisdictional. Drainages in the southern portion of the study area were not delineated in detail due to project avoidance.

Wetlands

White River

As noted above, a tributary to Ellison Creek that would be crossed by Segment 6C, and located in Sections 27 and 28, T13N, R60E, supports a long stringer of hydrophytic vegetation. The flow that supports this community issues from Warm Spring west of the segment. This flow supports a community of Baltic rush and spikerush (*Eleocharis spp.*). The channel becomes incised within the alignment, but continues to support a 2.5-acre well-developed hydrophytic vegetation community.

A wide wetland community was also found bordering the White River channel below the Kirch WMA. The river was dry at this location at the time of the June survey, but soils were damp and included evidence of iron oxides or hydroxides (redox features). The vegetation community below a break in slope included hard- and/or soft-stem bulrush and northwest cinquefoil. The community above the break in slope included Baltic rush and inland saltgrass, with some iodine bush (*Allenrolfea occidentalis*, a FACW species) present in an alkali-encrusted area in the southeastern portion of the crossing site. A total of 74.6 acres of wetland, including the White River channel, was present within the project area at this location.

Summary

A wetlands and waters of the U.S. delineation conducted for the project area identified potential waters of the U.S. that would also be crossed by Segment 6C at Jakes Wash, Ellison Creek, and the upper White River. Detailed delineation of dry washes south of the White River was not conducted due to project avoidance and it is anticipated that only features connected to (and including) the Pahranagat Wash would be potentially jurisdictional.

Wetland areas were identified in the project area within Segment 6C on a tributary to Ellison Creek and on the White River below the Kirch WMA.

3.2.3.4 Floodplains

A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) shows the majority of project elements are located in Zone C, defined by FEMA as areas of minimal flooding, or Zone D, defined as an area of undetermined, but possible, flood hazard. The following project elements have potential involvement with areas mapped as Zone A, which is defined as areas of 100-year flood potential, where base flood elevations and flood hazard factors have not been identified:

- Segment 6C (Proposed Action) crosses a section of the White River south of the Kirch WMA in Nye County;
- Segment 11 (Proposed Action) lies west of, and crosses, a section of the Pahranagat Wash in Coyote Springs Valley in Clark County;
- Segment 11 (Proposed Action) passes through an unnamed dry lake area within Hidden Valley in Clark County;
- Segment 11 (Proposed Action) lies immediately west of Dry Lake near the Harry Allen Substation site.

FEMA defines special flood hazard areas (SFHAs) as the area where the National Flood Insurance Program's floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. SFHAs include Zones A, AO, AH, A1-30, AE, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO, V1-30, VE, and V. In addition to

those areas located in Zone A as described above, SFHAs exist to the west (near Hiko Wash, Ash Springs, and Alamo, NV) and the east (near Dry Canyon Wash, Cathedral Gorge Wash, and Caliente, NV) of the project area in Lincoln County; however, the project area itself in Lincoln County only occurs within Zone D.

3.3 Geology and Minerals

The project area, shown in **Figure 1.1-1**, is located within the Basin and Range Physiographic Province, which encompasses the state of Nevada (Eaton 1979). This province owes its name to the general geologic history common to this part of the country that has given rise to the present-day landscape of altering generally north-south trending mountains separated by intervening valleys or basins.

The geologic units in the vicinity of the project area range from Precambrian in age to recent Quaternary deposits. **Figure 3.3-1** is a generalized stratigraphic nomenclature of the project area (BLM 2003a). While the current landscape formed during the past 10 to 20 million years, the geologic history of the region contains important features dating to the Precambrian era (more than 550 million years before present). The metamorphic rocks (quartzites and schist) of the Precambrian age are the oldest and lowest units in the regional stratigraphic column and therefore are commonly referred to as "basement rocks." Early Cambrian age formations (approximately 500 million years before present) consist principally of quartzite and shale. Typically, they are also considered basement rocks largely because of their relatively impermeable nature with respect to ground water flow (Peterson and Grow 1995).

The thickness and composition of the Paleozoic carbonate rocks are notable in their homogeneity over large areas in the province (Peterson and Grow 1995). Rocks of middle Triassic to early Jurassic age in eastern Nevada, therefore, largely consist of sandstone, shale, and freshwater limestone (Tschanz and Pampeyan 1970; Hose and Blake 1976). During the late Mesozoic Era, the Sevier Orogeny (a period of mountain building) occurred due to extensive regional compression of the earth's crust, by and large, along the same belt that formed the ancient continental shelf (during Paleozoic time) that runs from southern Idaho through western Utah and southeastern California (Rowley and Dixon 2001).

The geologic structure of the region became more complex in the middle and late Tertiary period (starting around 20 million years ago) when the tectonic forces reversed, resulting in crustal extension. The resulting parallel sequence of mountain ranges and intervening basins, interspersed with mountains of volcanic origin, combine to give the region its characteristic basin-range topography seen today (Rowley and Dixon 2001).

3.3.1 Area of Analysis

The proposed project disturbance areas, including the Robinson Summit Substation, the RSS-Site B sub-alternative, the Falcon Substation expansion area, and the proposed and alternative transmission routes are included in the area of analysis. Construction and excavation associated with the substations and transmission structures has the potential to impact localized geology.

3.3.2 Data Sources and Methods

This section discusses the geological and mineral resources within the project area. Although specific aspects of the geology of White Pine County are described in several reports and publications, the principal source of geological information for this FEIS is Hose and Blake

(1976). Additional data on mining claims, oil and gas leases, and geothermal leases were obtained from the BLM LR 2000 database.

3.3.3 Existing Conditions

3.3.3.1 Local Geology

All of the components of the Proposed Action and Action Alternative are located in White Pine, Lincoln, Nye, Eureka, and Clark counties. A geologic map of the project area is shown in **Figures 3.3-2a** and **3.3-2b** with the explanation on **Figure 3.3-3**.

The valleys of the project area consist of tectonic basins created by vertical offset along the principal north-south trending range-front geologic faults at the base of the various mountain ranges to the east and to the west.

The valley-fill deposits generally include the entire spectrum of unconsolidated sediment textures from clay and silt to sand and gravel, deposited in interbedded layers of various mixtures. The valley-fill material is produced by erosion of the surrounding mountains. The resulting sediment is transported into the valleys by the various streams and creeks that drain the mountain slopes and subsequently deposit the material in alluvial fans that eventually coalesce and fill the valleys to their present elevations. Some valleys also contain fine-grained deposits laid down in localized rivers and/or lakes that occupied the low areas of the valleys.

3.3.3.2 Geologic Faults and Seismicity

There are faults and fault zones (**Table 3.3-1**, and **Figures 3.3-2a** and **3.3-2b**) that occur within the project area, all of which are normal faults with the exception of the Kane Spring Wash fault, which is a sinistral, left lateral fault (USGS 2007a).

These generally north-south trending fault systems are mapped over lengths up to 100 miles, and are included in the USGS Quaternary Fault Database indicating that some movement has occurred along these fault systems within the last 1.6 million years. Active faults are typically considered to have had movement within the last 10,000 years (USGS 2006).

No major earthquakes (greater than magnitude of 5.0) have been recorded within the immediate project area since at least 1852 (Yeats et al. 1997). **Figures 3.3-2a** and **3.3-2b** show the most recent earthquake locations in the project area and readings dating back to 2000.

The historic level of earthquake potential in eastern central Nevada is relatively low (USGS 2007b). According to the USGS peak acceleration return frequency maps (USGS 2007b), all of the components of the Proposed Action and Action Alternative are located within an area where the probability is 10 percent that, within the next 50 years, an earthquake capable of generating a ground acceleration of 0.15 g (g is the force of gravity) or less will occur.

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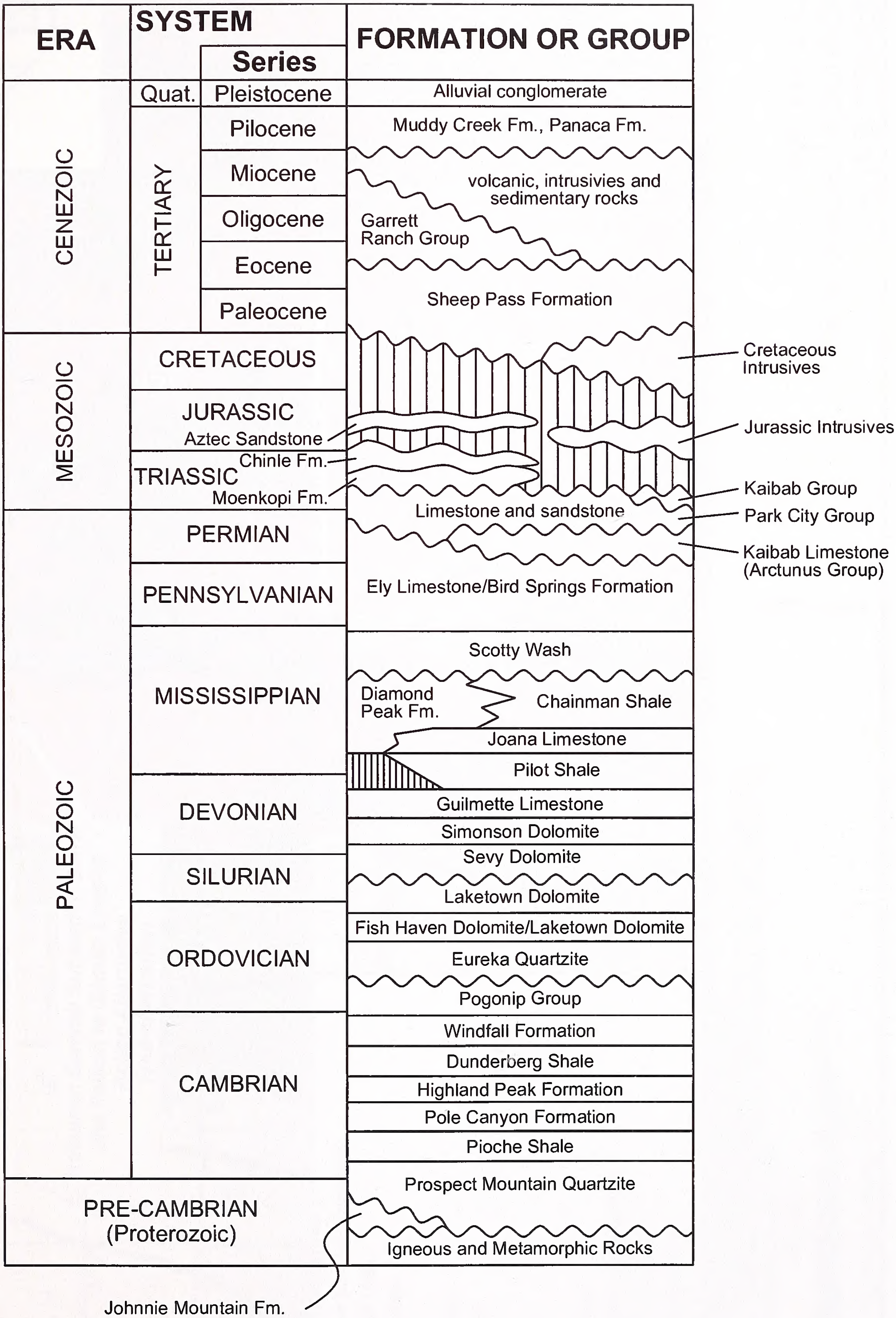


FIGURE 3.3-1
STRATIGRAPHIC COLUMN
ON LINE PROJECT

Source: Modified from Peterson and Grow (1995).

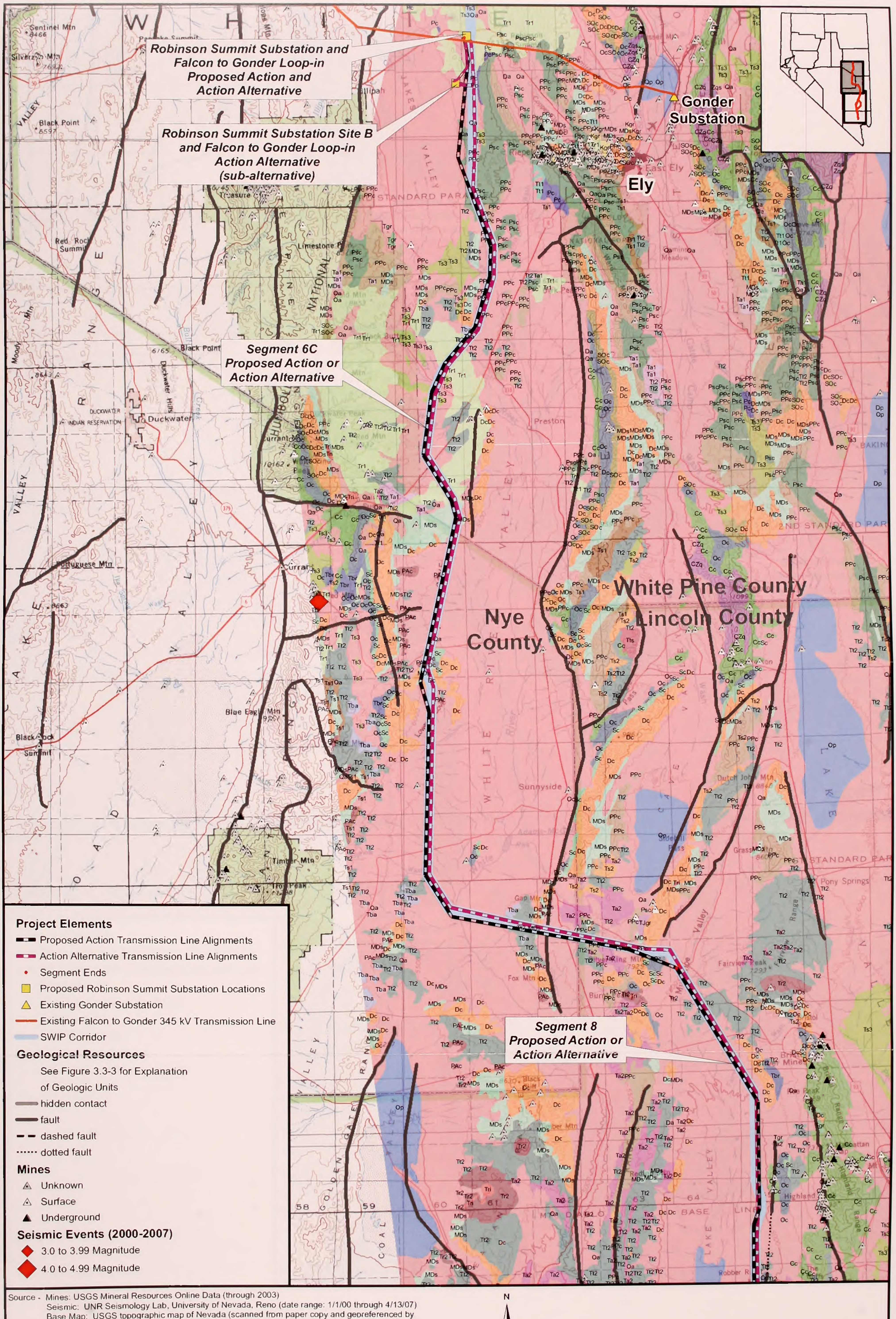
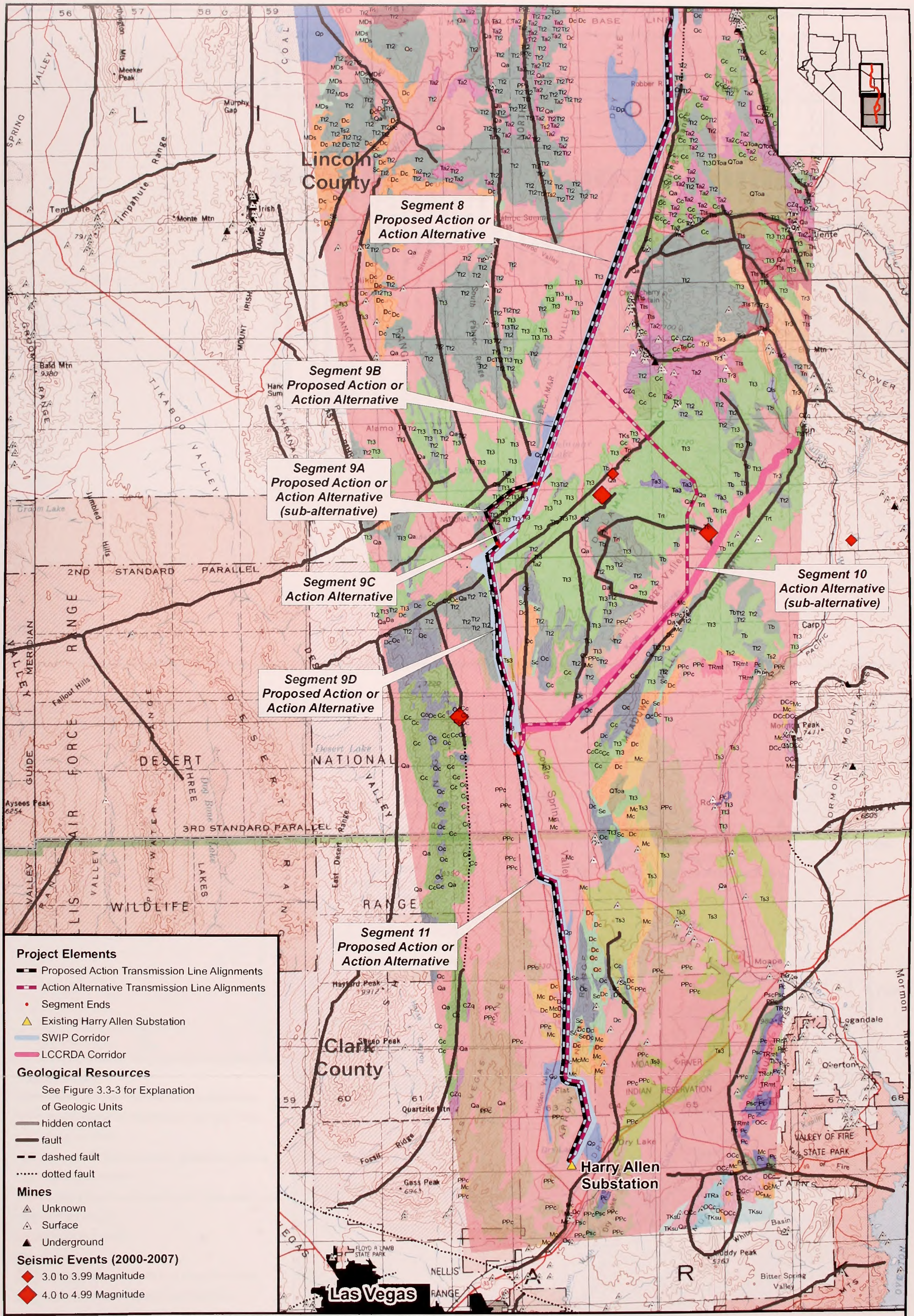


FIGURE 3.3-2a
GEOLOGICAL RESOURCES
ON LINE PROJECT



Source - Mines: USGS Mineral Resources Online Data (through 2003)
Seismic: UNR Seismology Lab, University of Nevada, Reno (date range: 1/1/00 through 4/13/07)
Base Map: USGS topographic map of Nevada (scanned from paper copy and georeferenced by R. Hess, University of Nevada Reno)

1:500,000
10 0 10 Miles
10,000 0 10,000 Meters
Scale is 1:500,000 when printed at 11"x17"

N

FIGURE 3.3-2b
GEOLOGICAL RESOURCES
ON LINE PROJECT

EXPLANATION OF GEOLOGIC MAP UNITS

CENEZOIC	QUATERNARY	Qa, ALLUVIAL DEPOSITS
		Qp, PLAYA, MARSH, AND ALLUVIAL-FLAT DEPOSITS, LOCALLY ERODED
	TERTIARY	Ta1, ANDESITE AND RELATED ROCKS OF INTERMEDIATE COMPOSITION
		Ta2, ANDESITE AND RELATED ROCKS OF INTERMEDIATE COMPOSITION
		Ta3, ANDESITE AND RELATED ROCKS OF INTERMEDIATE COMPOSITION
		Tb, BASALT FLOWS
		Tba, ANDESITE AND BASALT FLOWS
		Tbr, BRECCIA
		Tgr, GRANITIC ROCKS
		Tmi, INTRUSIVE ROCKS OF MAFIC AND INTERMEDIATE COMPOSITION
		Tr1, RHYOLITIC FLOWS AND SHALLOW INTRUSIVE ROCKS
		Tr2, RHYOLITIC FLOWS AND SHALLOW INTRUSIVE ROCKS
		Tr3, RHYOLITIC FLOWS AND SHALLOW INTRUSIVE ROCKS
		Tri, RHYOLITIC INTRUSIVE ROCKS
		Trt, ASH-FLOW TUFFS, RHYOLITIC FLOWS, AND SHALLOW INTRUSIVE ROCKS
		Ts1, SEDIMENTARY ROCKS
		Ts2, TUFFACEOUS SEDIMENTARY ROCKS
		Ts3, TUFFACEOUS SEDIMENTARY ROCKS
		Tt1, WELDED AND NONWELDED SILICIC ASH-FLOW TUFFS
		Tt2, WELDED AND NONWELDED SILICIC ASH-FLOW TUFFS
		Tt3, WELDED AND NONWELDED SILICIC ASH-FLOW TUFFS
		Tts, ASH-FLOW TUFFS AND TUFFACEOUS SEDIMENTARY ROCKS
		TKs, CONTINENTAL SEDIMENTARY ROCKS
		TKsu, CONTINENTAL SEDIMENTARY ROCKS
MESOZOIC	CRETACEOUS	Kgr, GRANITIC ROCKS
	JURRASSIC	Jgr, SILVER CREEK
	TRIASSIC	JTRa, AZTEC SANDSTONE
		TRch, CHINLE FORMATION
		TRmt, MOENKOPI FORMATION AND THAYNES FORMATION
PALEOZOIC	PERMIAN	Psc, ARCTURUS (NORTH) / COCONINO (SOUTH)
		Pc, REIPE SPRINGS LINESTONE / RIBHILL SANDSTONE
	PENNSYLVANIAN	PPc, ELY LIMESTONE (NORTH) / BIRD SPRINGS FORMATION (SOUTH)
	MISSISSIPPIAN	Mc, PILOT SHALE / JOANA LIMESTONE / CHAINMAN SHALE (NORTH/ / MONTICRISTO LIMESTONE (SOUTH)
		MDs, UNDIFFERENTIATED MISS / DEV SHALE, SILTSTONE, SANDSTONE, CONGLOMERATE
	DEVONIAN	Dc, GUILMETTE FORMATION
		DCc, UNDIFFERENTIATED DEVONIAN / CAMBRIAN DOLOMITE AND LIMESTONE
	SILURIAN	Sc, LAKETOWN DOLOMITE
		SOc, FISH HAVEN (NORTH) / LAKETOWN DOLOMITE (SOUTH)
	ORDOVICIAN	Oc, KANOSH SHALE / LEHMAN FORMATION / EUREKA QUARTZITE
		OCc, UNDIFFERENTIATED ORD / CAMBRIAN DOLOMITE AND LIMESTONE
	CAMBRIAN	Cc, PIOCHE SHALE AND ELDORADO LIMESTONE
		Css, PROSPECT QUARTZITE
		CZq, QUARTZITE AND MINOR AMOUNTS OF CONGLOMERATE, PHYLLITIC SILTSTONE, LIMESTONE, AND DOLOMITE
PRECAMBRIAN		Zqs, QUARTZITE, PHYLLITIC SILTSTONE, CONGLOMERATE, LIMESTONE, AND DOLOMITE

FIGURE 3.3-3
EXPLANATION OF GEOLOGIC MAP UNITS
ON LINE PROJECT

TABLE 3.3-1 FAULTS AND FAULT ZONES WITHIN STUDY AREA

FAULTS	USGS FAULT NUMBER	COUNTY	TRANSMISSION LINE SEGMENT	FAULT TYPE	FAULT AVERAGE STRIKE	FAULT DIP	LAST TIME OF DEFORMATION	FAULT SLIP-RATE
UNNAMED FAULT NORTHEAST OF KIMBERLY	1237	WHITE PINE	SEGMENT 6C	NORMAL	N24°W	NE	Q (<1.6 MA)	< 0.2 MM/YR
UNNAMED FAULT SOUTH OF RIPETOWN	1236	WHITE PINE	SEGMENT 6C	NORMAL	N16°W	W	Q (<1.6 MA)	< 0.2 MM/YR
UNNAMED FAULTS IN NORTHERN JAKES VALLEY	1224	WHITE PINE	SEGMENT 6C	NORMAL	N41°E	NW	LATEST Q (<15 KA)	< 0.2 MM/YR
EAST JAKES VALLEY FAULT ZONE	1225	WHITE PINE	SEGMENT 6C	NORMAL	N1°W	W	LATE Q (<130 KA)	< 0.2 MM/YR
PRESTON FAULT	1390	WHITE PINE	SEGMENT 6C	NORMAL	N15°E	E, SE, NW	LATE Q (<130 KA)	< 0.2 MM/YR
WHITE RIVER VALLEY FAULT ZONE	1398	LINCOLN/ WHITE PINE/ NYE	SEGMENT 6C	NORMAL	N7°E	W	LATE Q(<130 KA)	< 0.2 MM/YR
UNNAMED FAULT NEAR CURRANT CREEK SUMMIT	1386	WHITE PINE/ NYE	SEGMENT 6C	NORMAL	N2°E	E	Q (<1.6 MA)	< 0.2 MM/YR
UNNAMED FAULT NORTHEAST OF CURRENT CREEK SUMMIT	1387	WHITE PINE	SEGMENT 6C	NORMAL	N47°E	NW	Q (<1.6 MA)	< 0.2 MM/YR
PRESTON FAULT	1389	WHITE PINE	SEGMENT 6C	NORMAL	N15°E	E, SE, NW	LATE Q (<130 KA)	< 0.2 MM/YR
THE COVE FAULT	1390	WHITE PINE/ NYE	SEGMENT 6C	NORMAL	N31°E	E, SE	LATE Q (<130 KA)	< 0.2 MM/YR
UNNAMED FAULTS IN WHITE RIVER VALLEY	1397	NYE	SEGMENT 6C	NORMAL	N35°E	NW, SW	LATE Q (<130 KA)	< 0.2 MM/YR
MURPHY MEADOWS FAULT	1398	NYE	SEGMENT 6C	NORMAL	N54°E	NW	LATE Q (<130 KA)	< 0.2 MM/YR

FAULTS	USGS FAULT NUMBER	COUNTY	TRANSMISSION LINE SEGMENT	FAULT TYPE	FAULT AVERAGE STRIKE	FAULT DIP	LAST TIME OF DEFORMATION	FAULT SLIP-RATE
UNNAMED FAULT NEAR FOX MOUNTAIN	1401	NYE	SEGMENT 6C	NORMAL	N69°W	NW, N	Q (<1.6 MA)	< 0.2 MM/YR
WHITE RIVER FAULT	1403	LINCOLN	SEGMENTS 6C AND 8	NORMAL	N5°W	W	Q (<1.6 MA)	< 0.2 MM/YR
DRY LAKE FAULT	1124	LINCOLN	SEGMENTS 6C AND 8	NORMAL	N8°E	W, E	LATE Q (<130 KA)	< 0.2 MM/YR
DELAMAR VALLEY FAULT	1127	LINCOLN	SEGMENT 8	NORMAL	N12°E	W	Q (<1.6 MA)	< 0.2 MM/YR
DELAMAR MOUNTAINS FAULT	1126	LINCOLN	SEGMENTS 8, 9B, AND 10	NORMAL	N7°E	W	MID AND LAKE Q (<750 KA)	< 0.2 MM/YR
KANE SPRING WASH FAULT	1123	LINCOLN	SEGMENTS 9D, 10, AND 11	SINISTRAL	N37°E	NW	MID AND LAKE Q (<750 KA)	< 0.2 MM/YR
MAYNARD LAKE FAULT	1122	LINCOLN	SEGMENTS 9B, 9A, 9C, AND 9D	NORMAL	N35°E	NW, V	LATE Q (<130 KA)	< 0.2 MM/YR
COYOTE SPRINGS FAULT	1121	LINCOLN	SEGMENTS 9B, 9A, 9C, AND 9D	NORMAL	N1°W	W	LATE Q (<130 KA)	< 0.2 MM/YR
SHEEP RANGE FAULT	1164	LINCOLN/ CLARK	SEGMENTS 9B, 9A, 9C, 9D, AND 11	NORMAL	N0°E	E, W	LATE Q (<130 KA)	< 0.2 MM/YR
WILDCAT WASH FAULT	1062	LINCOLN/ CLARK	SEGMENT 11	NORMAL	N4°E	W	MID AND LAKE Q (<750 KA)	< 0.2 MM/YR
ARROW CANYON RANGE FAULT	1061	CLARK	SEGMENT 11	NORMAL	N9°E	W	Q (<1.6 MA)	< 0.2 MM/YR

MA – million years
KA – thousand years
MM - millimeter

3.3.3.3 Mineral and Energy Resources

Authorizations, ROW, and/or Leases Occurring in Project Area

The following lists the energy resources that could be impacted by the project because they occur within or near the project area:

- Active[1] mining claims
- Oil and gas leases

The area of analysis includes the individual mining claims and oil and gas leases located within the same Township, Range, and Section that a component of the Proposed Action or Action Alternative occur and are listed in **Tables 3.3-2** and **3.3-3**. Numerous other types of ROWs occur throughout the project area, such as utility and road ROWs.

Authorizations, ROW, and Leases Not Occurring in Project Area

The following lists the energy resources that would not be impacted by the project because they do not occur within or near the project area and thus are not discussed further in this FEIS:

- Coal authorizations
- Solar energy ROWs
- Wind energy ROWs
- Oil shale leases
- Geothermal leases

Mining Districts

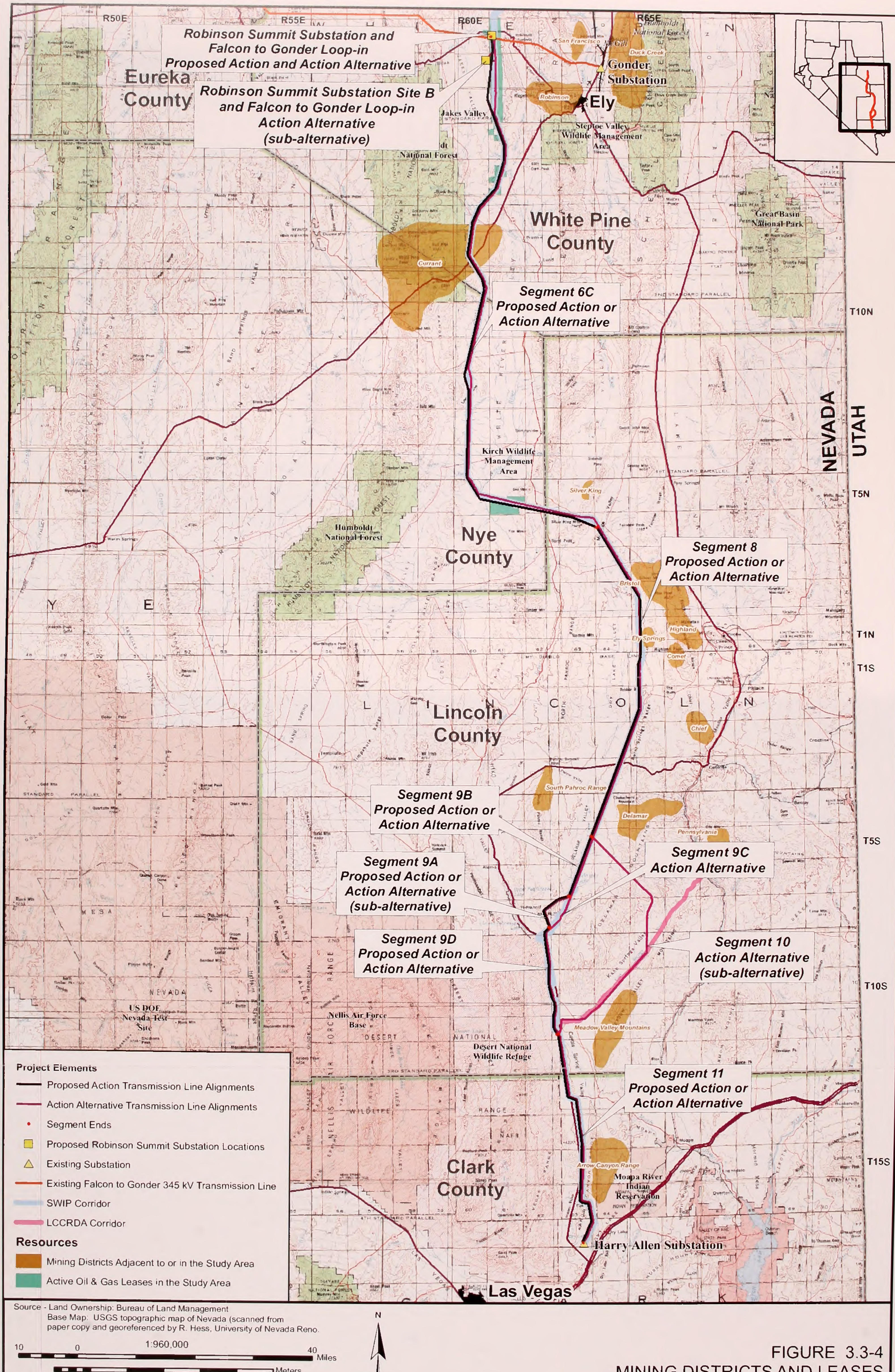
Table 3.3-2 lists the Nevada mining districts that are adjacent to and/or would be crossed by the Proposed Action or Action Alternative. The locations of the active mining districts are presented on **Figure 3.3-4**.

[1] "Active" means the claim is in good standing administratively. It does not imply the claim is valid or that there is current mining activity taking place on the claim.

TABLE 3.3-2 MINING DISTRICTS ADJACENT TO OR WITHIN THE PROJECT ROWS

COUNTY / DISTRICT NAME	TRANSMISSION LINE SEGMENT	ACTIVE MINING CLAIMS LEAD FILE NUMBER	PRIMARY COMMODITIES OF MINING DISTRICTS
White Pine County			
Robinson	Segment 6C	NMC77369	Copper, gold, silver, zinc, lead, iron, manganese, tungsten, molybdenum, rhenium, platinum, palladium, nickel
Currant	Segment 6C		Gold, lead, copper, tungsten, magnesite, uranium, fluorspar
Nye County			
Currant	Segment 6C	NMC1006781 NMC969216 NMC960343 NMC753739	Gold, lead, copper, tungsten, magnesite, uranium, fluorspar
Lincoln County			
Silver King	Segment 6C		Silver, lead, gold, copper
Bristol	Segment 8		Silver, copper, lead, zinc, gold, manganese, montmorillonite
Highland	Segment 8		Lead, silver, gold, copper, tungsten, manganese, iron
Ely Springs	Segment 8		Silver, zinc, lead, gold
Comet	Segment 8		Lead, silver, zinc, gold, copper, tungsten
Chief	Segment 8		Gold, silver, lead, copper, vanadium
South Pahroc Range	Segment 8		
Delamar	Segment 8, 9B, and 10 (sub-alt)		Gold, silver, copper, lead, perelite
Pennsylvania	Segment 10 (sub-alt)		Gold, silver, copper
Meadow Valley Mountains	Segments 9D, 10 (sub-alt), and 11		Gold, silver, uranium
Clark County			
Arrow Canyon	Segment 11	NMC908337	Silica, building stone

Source: http://www.blm.gov/landandresourcesreports/rptapp/menu.cfm?appCd=2



Source - Land Ownership: Bureau of Land Management
Base Map: USGS topographic map of Nevada (scanned from paper copy and georeferenced by R. Hess, University of Nevada Reno.

FIGURE 3.3-4
MINING DISTRICTS AND LEASES ON LINE PROJECT

Active Oil and Gas Leases

Table 3.3-3 lists the active oil and gas leases that occur within or near the project area. Locations of the oil and gas leases can be found on **Figure 3.3-4** and in **Table 3.3-3**.

TABLE 3.3-3 ACTIVE OIL AND GAS LEASES WITHIN OR ADJACENT TO THE PROJECT AREA

COUNTY	PROJECT SEGMENT	LOCATION	SECTIONS AFFECTED	SERIAL NUMBER	CASE TYPE
White Pine	Segment 6C	T18N R61E	18, 19	NVN082543	311121
White Pine	Segment 6C	T18N R61E	31, 32	NVN082541	311121
White Pine	Segment 6C	T18N R61E	29, 30	NVN082562	311121
White Pine	Segment 6C	T18N R61E	29, 30	NVN082563	311121
White Pine	Robinson Summit Substation	T18N R61E	19	NVN083586	315100
White Pine	Segment 6C	T18N R60E	13	NVN082117	312021
White Pine	Segment 6C	T17N R61E	6, 7	NVN082242	311121
White Pine	Segment 6C	T17N R61E	29	NVN082512	311121
White Pine	Segment 6C	T17N R61E	5, 8	NVN082537	311121
White Pine	Segment 6C	T17N R61E	17, 20	NVN082539	311121
White Pine	Segment 6C	T17N R61E	18, 19	NVN082539	311121
White Pine	Segment 6C	T17N R61E	32	NVN082540	311121
White Pine	Segment 6C	T17N R61E	32	NVN083648	311121
White Pine	Segment 6C	T17N R61E	31, 32	NVN082541	311121
White Pine	RSS-Site B Sub-Alt	T17N R60E	12	NVN082222	311121
White Pine	Segment 6C	T16N R61E	20, 29	NVN082090	311121
White Pine	Segment 6C	T16N R61E	5, 8	NVN082205	311121
White Pine	Segment 6C	T16N R61E	6, 7	NVN082206	311121
White Pine	Segment 6C	T16N R61E	17, 18	NVN082207	311121
White Pine	Segment 6C	T16N R61E	19, 30, 31	NVN082208	311121
White Pine	Segment 6C	T16N R61E	32	NVN082536	311121
White Pine	Segment 6C	T15N R61E	1	NVN085336	311121
White Pine	Segment 6C	T15N R61E	5, 7, 17	NVN082089	311121
White Pine	Segment 6C	T15N R61E	9, 16, 21	NVN085319	311121
White Pine	Segment 6C	T15N R61E	22	NVN085387	311121
White Pine	Segment 6C	T15N R61E	27, 28, 33, 34	NVN085318	311121
White Pine	Segment 6C	T14N R61E	3	NVN085324	311121
White Pine	Segment 6C	T14N R61E	4, 9	NVN085322	311121
White Pine	Segment 6C	T14N R61E	8, 17	NVN085323	311121
White Pine	Segment 6C	T14N R61E	16	NVN085326	311121
White Pine	Segment 6C	T14N R61E	8, 19, 16, 17, 20, 29	NVN061766	312021
White Pine	Segment 6C	T14N R61E	21	NVN085429	311121
White Pine	Segment 6C	T14N R61E	30, 31	NVN085320	311121
White Pine	Segment 6C	T14N R61E	31, 32	NVN061767	312021
White Pine	Segment 6C	T13N R60E	1	NVN085498	311121
White Pine	Segment 6C	T13N R60E	11	NVN086395	312021
White Pine	Segment 6C	T13N R60E	12, 13, 23	NVN086396	312021
White Pine	Segment 6C	T13N R60E	14, 15, 22	NVN086397	312021
White Pine	Segment 6C	T13N R60E	27, 34	NVN086398	312021
White Pine	Segment 6C	T12N R60E	15, 16, 21, 22	NVN086392	312021
White Pine	Segment 6C	T12N R60E	27, 28, 33, 34	NVN086393	312021

COUNTY	PROJECT SEGMENT	LOCATION	SECTIONS AFFECTED	SERIAL NUMBER	CASE TYPE
White Pine, Nye	Segment 6C	T11N R60E	24, 25, 36	NVN086339	311121
Nye	Segment 6C	T10N R60E	1, 12	NVN084386	312021
Nye	Segment 6C	T5N R62E	27-35	NVN058049	311121
Nye	Segment 6C	T5N R61E	18, 19, 20	NVN086802	312021
Nye	Segment 6C	T5N R61E	21	NVN086801	312021
Nye	Segment 6C	T5N R61E	23, 24	NVN080576	311121
Nye	Segment 6C	T5N R61E	22	NVN080583	311121
Nye	Segment 6C	T5N R61E	27	NVN086803	312021

Source: http://www.geocommunicator.gov/NILS-PARCEL2/map.jsp?MAP=ENERGY

Authorized Geothermal Leases

There are no active authorized geothermal leases within the project area.

3.3.4 Specific Project Area Conditions

From and including the Robinson Summit Substation area, the Proposed Action transmission line or the Action Alternative line route (including the RSS-Site B sub-alternative) would head south through Cenozoic Tertiary rhyolitic flows and shallow intrusive volcanics and more Paleozoic Pennsylvanian Ely limestone, Permian Reipe Springs limestone, Ribhill sandstone, and Arcturus Formation. From here, the transmission line route enters the Quaternary basin-fill deposits of eastern Jakes Valley.

The transmission line route then skirts the western edge of the Egan Range and crosses Triassic volcanics and Pennsylvanian sediments before it heads back up into the Egan Range through Paleozoic Pennsylvanian Ely limestone, Permian Reipe Springs limestone, Ribhill sandstone, and Arcturus Formation.

Briefly, the transmission line route crosses Quaternary basin-fill deposits of northern White River Valley before heading up into the flanks of the Egan Mountains. Here the transmission line route crosses Cenozoic Tertiary volcanic deposits and Mississippian Pilot shale, Joana limestone, Chainman shale, and a smaller outcrop of Devonian Guilmette limestone before heading down into the White River Valley.

The transmission line route crosses into Nye County through Quaternary basin-fill deposits in the 70-mile long and 4- to 18-mile wide White River Valley. Here, the transmission line route climbs the eastern flanks of the Grant Range for approximately 10 miles where Ordovician Lehman Formation limestone and Eureka quartzite, the Devonian Guilmette limestone, Mississippian Pilot shale, Joana limestone, Chainman shale, and minor Cenozoic Tertiary welded and non-welded silica ash-flow tuff volcanics are encountered. The route then drops back down into the Quaternary basin-fill of the White Pine Valley.

The transmission line route then turns to the east, entering Lincoln County, where it climbs into the Schell Creek Range through Silver Creek Pass. Here, Cenozoic Tertiary volcanics consisting of andesites, basalts, and welded and non-welded silica ash-flow tuffs are crossed in addition to the Ordovician Lehman Formation limestone and Eureka quartzite, undifferentiated Ordovician dolomites and limestones, Silurian Laketown dolomite, Devonian Guilmette limestone, Mississippian Pilot shale, Joana limestone, and Chainman shale.

The transmission line route then traverses Quaternary basin-fill deposits and Cenozoic Tertiary welded and non-welded silica ash-flow tuffs of the Dry Lake Valley. This valley is 40 miles long

and 4 to 12 miles wide, and is bordered by the Schell Creek and North Pahroc Ranges to the west and the Schell Creek, West, Bristol, Highland, Chief Ranges, and Delamar Mountains to the east. It then passes into the Delamar Valley, which is 45 miles long and 4 to 11 miles wide, where Quaternary basin-fill deposits are crossed.

The transmission line route then rises out of the Quaternary basin-fill deposits of Delamar Valley and crosses the southern portion of the Delamar Mountains where Cenozoic Tertiary welded and non-welded ash-flow tuffs and andesites are crossed.

Where the transmission line route descends the southern flanks of the Delamar Mountains, Cenozoic Tertiary volcanics, consisting of andesites and welded and non-welded silica ash-flow tuffs, are encountered including a small deposit of Quaternary basin-fill deposits before the route heads into Coyote Springs Valley.

Coyote Springs Valley, in the vicinity of the transmission line route, contains Cenozoic Quaternary valley-fill alluvium and Tertiary tuffaceous sedimentary deposits. The transmission line continues south through the Quaternary basin-fill deposits until it starts up the western flanks of the Arrow Canyon Range where the Paleozoic Devonian Guilmette limestone and Mississippian Monte Cristo limestone are crossed. The transmission line route then abruptly turns to the east and crosses the Arrow Springs Range encountering Mississippian Monte Cristo limestone, and Pennsylvanian Bird Spring Formation before heading south down the eastern flank of the range, and entering the Quaternary valley-fill deposits in Dry Lake Valley to its southern terminus at the Harry Allen substation.

Segment 10 (sub-alternative)

The Action Alternative Segment 10 (sub-alternative) heads southeast through southern Dry Lake Valley, crossing Quaternary alluvium before the route heads up into the Delamar Mountains consisting of Cenozoic Tertiary welded and non-welded silica ash-flow tuffs. Segment 10 (sub-alternative) then heads south down through Boulder Canyon, crossing Cenozoic Tertiary rhyolitic intrusives and basaltic flows, and Quaternary alluvial valley deposits. The route then heads southwest into Kane Springs Wash where Quaternary alluvial valley deposits and a minor outcrop of Ordovician Lehman Formation limestone, Kanosh shale, and Eureka quartzite are crossed.

Falcon Substation

The Falcon Substation is located in Boulder Valley. The substrate is comprised of deep Quaternary valley-fill alluvium on almost flat topography (BLM 2001a). A major fault zone is located near Dunphy. No mines are located in the immediate vicinity, although the Mule Canyon and Argenta Mines are within 10 miles and the Carlin Trend mines are located within 20 miles. There are scattered geothermal wells in Boulder Valley.

3.4 Paleontological Resources

Paleontological resources are fossilized remains of past life including invertebrate and vertebrate animals and multi-cellular plants, including imprints. These resources are non-renewable and therefore are considered sensitive. Due to their paucity, fossils are important records of ancient life, particularly vertebrate fossils. Federal requirements for protection of paleontological resources include the 1906 Federal Antiquities Act, Historical Sites Act of 1935, the Federal Land Policy and Management Act of 1976, and BLM Paleontology Resources Management Manual and Handbook H-8270-1 (revised 1998). Unauthorized collection or removal of vertebrate, rare invertebrate, and rare plant fossils from federal land is illegal.

3.4.1 Area of Analysis

A project-specific paleontological resources assessment was conducted (Reynolds 2007) for some of the project components (i.e. Robinson Summit Substation, Segment 9A, Segment 10 sub-alternative). The transmission line segments that were covered in the SWIP Corridor EIS (BLM 1993) were assessed in a previous report (SBCM 2006). Construction excavation associated with the Robinson Summit Substation, Falcon Substation expansion area, and transmission line alignment has the potential to disturb subsurface sediments that have the potential of containing significant, nonrenewable paleontological resources.

3.4.2 Data Sources and Methods

Paleontological resource data was collected through literature searches and field inspection (Reynolds 2007 and SBCM 2006).

For the purposes of the paleontological study, sediments are characterized by their potential to contain significant paleontological resources. Sedimentary units that are characterized as sensitive are those with a high potential for containing significant paleontologic resources, in other words, geologic units within which vertebrate fossils or significant invertebrate fossils have been determined by previous studies to be present or likely to be present.

These characterizations can extend anywhere within the sedimentary unit's geographical extent and to units that are suitable for preservation of fossils. The following designations were used (Reynolds 2007 and SBCM 2006):

- High paleontological sensitivity at surface exposures (High at Surface)
- High paleontological sensitivity 5 feet below surface (High below Surface)
- Low paleontological sensitivity at surface exposures (Low at Surface)
- Low paleontological sensitivity 5 feet below surface (Low below Surface)
- Undetermined paleontological sensitivity

3.4.3 Existing Conditions

Fossils are abundant in the Basin and Range geologic province. The Paleozoic Era, ranging from 235 to 550 million years ago, includes seven periods beginning with the Cambrian Period (480 to 550 million years ago) with abundant fossil olenelloid trilobites. Fish, the earliest fossil vertebrates, are known to occur in Nevada in sedimentary rocks of Silurian Age from about 390 to 415 million years ago (Carroll 1987). Many later Paleozoic limestones and shales have produced diverse invertebrate faunas containing sponges, corals, stromatoporid structures, brachiopods, gastropods, pelecypods, cephalopods, crinoids, and echinoderm spines. The Permian Kaibab limestone, dating from about 235 to 275 million years ago, is easily recognized by the large, dome-shaped, productid brachiopod fossils that it contains.

Mesozoic Era (about 60 to 235 million years ago) deposits began with Triassic limestones and siltstones. Marine limestones often contain fossil pelecypods, gastropods, and corals. Late Triassic sediments at Ichthyosaur State Park (Austin, Nevada) contain dolphin-shaped marine reptiles. Jurassic sandstones in southern Nevada contain tracks of bipedal dinosaurs, mammal-like reptiles, and flying reptiles—the pterosaurs (Reynolds and Weasma 2002; Reynolds 2006a; Reynolds and Mickelson 2006). Dinosaurs have recently been discovered in Cretaceous sediments in Clark County (Bonde et al. 2006).

The Cenozoic Era (present to about 60 million years ago) is the age of mammals, and Nevada contains a long record of unusual fossil mammals. The Elderberry Creek Fauna south of Ely is a very diverse Eocene fauna containing 30 species of mammals and 10 species of lower vertebrates (Emry and Korth 1989; Emry 1990). Middle Miocene deposits of volcaniclastic sediments containing Barstovian and Clarendonian Land Mammal Age faunas are recognized from White Pine County. Late Miocene and early Pliocene Hemphillian and Blancan Land Mammal Age sediments with abundant vertebrate fossils are known from the Caliente area of Lincoln County. Late Miocene Hemphillian Land Mammal Age trackways are known from the Muddy Creek Formation in eastern Clark County (Reynolds 2006b). These red sandstones are overlain by early Pliocene Blancan Land Mammal Age sediments with abundant vertebrate fossils (Reynolds and Lindsay 1999).

Pleistocene fossils from the late Cenozoic Era are found in valley bottoms and in caves developed in limestones on high mountains (Austin et al. 2005; Bell 1990, 1993, 1995; Emslie and Czaplewski 1985; Mead 1988; Mead and Bell 1996; Palevich 2002; Wormington and Ellis 1967). The White Pine Public Museum contains a fossil horse tibia from the Pleistocene deposits in Spring Valley located east of Steptoe Valley.

3.4.4 Specific Project Area Conditions

Information regarding paleontological sensitivities along the applicable segments of the SWIP Utility Corridor (BLM 1993; SBCM 2006), from approximately the east side of Egan Range to Delamar Valley (Segments 6C and 8), is minimal and general as it was assessed from a literature review without field inspection. These were not included in the project specific assessment (Reynolds 2007) since they were included in analysis of the SWIP Corridor EIS (BLM 1993, SBCM 2006). The valley floors and bases of the mountain ranges are composed of Quaternary alluvial deposits that generally have a low potential for paleontological resources (Stewart 1980). Small areas with lacustrine (lakebed) sediments are also located in valley bottoms; these have high paleontological potential (Dames & Moore 1983). Invertebrate fossils—including brachiopods, corals, and mollusks—are found in Nye County along the SWIP Utility Corridor (BLM 1993). Tertiary sedimentary rock with a high paleontological sensitivity is present north of Robinson Summit. Further, younger tertiary sedimentary rocks are present in a few small areas south of Robinson Summit and near Ellison Creek west of Preston, which are of high paleontological sensitivity.

Reynolds (2007) conducted a paleontological study of the transmission line segments outside the SWIP Utility Corridor. According to the SBCM report (2006) for the SWIP Utility Corridor, no significant paleontologic resource localities are recorded within the SWIP Utility Corridor. The findings are presented in **Table 3.4-1**.

TABLE 3.4-1 PALEONTOLOGICAL SENSITIVITIES IN THE ON LINE PROJECT AREA

PROJECT COMPONENT	PALEO SENSITIVITY
Segment 6C*	Low paleo sensitivity for majority of the segment with areas of undetermined sensitivity in the central portion and areas of high paleo sensitivity in middle and southern portion.
Segment 8*	The northern third of this segment has high paleontological sensitivity with areas of undetermined sensitivity in the middle and the southern end.
Segment 9A**	Part of Segment 9A crosses playa silts and sandy siltstones of Delamar Playa. The perimeter of the playa has a "High at Surface" designation. Southwest of Delamar Valley, Segments 9A crosses non-fossiliferous Miocene volcanic flows and ignimbrites and non-fossiliferous alluvium in drainages.
Segment 9B**	Segment 9B crosses playa silts and sandy siltstones of Delamar Playa. The perimeter of the playa has a "High at Surface" designation Southwest of Delamar Valley.
Segment 9C (Action Alternative)**	Segment 9C crosses non-fossiliferous Miocene volcanic flows and ignimbrites and non-fossiliferous alluvium in drainages.
Segment 9D**	Segment 9D crosses non-fossiliferous Miocene volcanic flows and ignimbrites and non-fossiliferous alluvium in drainages.
Segment 10 (Action Alternative sub-alternative)**	Segment 10 (sub-alternative) contacts the Pliocene sediments north and south of US-93 at the junction with Kane Spring Valley Road, and for approximately 3 miles east of US-93. This section of the segment has a paleontological sensitivity designation of "High below Surface."
Segment 11	Segment 11 has undetermined paleontological sensitivity on the north half and low paleontological sensitivity on the south half.
Robinson Summit Substation**	The Robinson Summit Substation is located near the crest of Egan Range. This location is characterized by a thin veneer of late Tertiary gravels that overlies middle Miocene volcaniclastic sediments. Such sediments are reported to contain middle Miocene Barstovian North American Land Mammal Age mammals at Ellison Creek to the west, Butte Range to the north, and southern Schell Creek Range to the southeast. These Miocene sandstones have been designated with "High at Surface" paleontological sensitivity.
RSS-Site B Sub-Alternative*	The RSS-Site B sub-alternative is located on the east edge of Jakes Valley, on the western fan of the Egan Range. This area has low paleontological sensitivity.
Falcon Substation Expansion Area	The Falcon Substation is located in Boulder Valley. The substrate is comprised of deep Quaternary alluvium that has low paleontological sensitivity (BLM 2001a).

*source SBCM 2006
**source Reynolds 2007

3.5 Soils

3.5.1 Area of Analysis

The proposed general project area is shown in **Figure 2.2-1**. The area of analysis was defined as the potential disturbance footprint of the components of the Proposed Action or Action Alternative.

3.5.2 Data Sources and Methods

As described in **Section 1.13.2**, issues and indicators were developed by resource to assist in focusing the data collection on existing conditions in the area of analysis and to aide in the impact analysis for Chapter 4. Indicators for soils focused on acreage of soil disturbance, acres to be reclaimed, and suitability of potentially disturbed soils for reclamation purposes.

Available data from the Natural Resource Conservation Service (NRCS) and other scientific or governmental sources were utilized to obtain information for this section. The Official Soil Series Descriptions website (USDA 2007a) is the main reference for determining soil characteristics. Procedures and interpretations were adapted primarily from revised Internet versions of the *Soil Survey Manual* (USDA 2003) and the *National Soil Survey Handbook* (USDA 2005).

3.5.3 Existing Conditions

Soil Map Unit Descriptions

Soils are shown at a 3rd Order level throughout the majority of the project area (see soils maps in **Appendix 3A**); although, some areas of Nevada have not been surveyed and do not have soil mapping information. Soil map units consist of associations and consociations of individual soil series. Hundreds of individual soil map units have been identified within the project area.

Map units are identified by land types and cover a wide range of topography within the project area—from valley and drainage bottoms to canyon slopes, sideslopes, and ridgetops. Soils found on basin floors typically range from fine-grained to moderately coarse textures, and show little profile development. Accumulations of soluble salts or silica may occur at depth. Fan piedmonts can be shallow to very deep and range from moderately fine to moderately coarse or gravelly texture. Silica and lime cementation may be present in some of these soils. Soils found on mountain slopes contain gravel and coarse-textured material and are typically underlain by bedrock at shallow depths. Soils on hills and mountains may be at risk for erosion, especially on steeper slopes. Fine to coarse textured soils are found on the moderate slopes of alluvial fans and stream terraces. Soils in these settings are associated with high water tables and occasionally can be flooded (BLM 2008a).

Soils are strongly influenced by the type of bedrock geology (BLM 2008a). Parent materials for soils within the project area consist of mixed rock materials, including sandstone, dolomite, limestone, chert, volcanic rocks, and lacustrine deposits, formed from loess, colluvium, alluvium and residuum (USDA 2007a). Soil in drainages and swales developed primarily from alluvial materials, loess is derived from windblown soil. Colluvium is the parent material for development of soil on most slopes.

The majority of soil resources in the project area are classified as very deep, well-drained soils. Soil textures are generally loamy with a high percentage of coarse fragments. Representative slope steepness ranges from 1 to 53 percent, and varies depending on the profile location. Soil depths in the project area range from rock outcrop areas with no measurable soil to profiles greater than 5 feet thick. Deeper portions of the soil profile generally contain a high percentage of coarse fragments, with the high average ranging from 35 to 65 percent pebbles and cobbles (USDA 2007a).

3.5.3.1 Prime Farmland

Prime farmland is classified as available land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops (USDA 2003). Prime soils have the quality, growing season, and moisture supply needed to produce economical crops, including few or no rocks. No soils in the project area are classified as prime farmland.

3.5.3.2 Growth Medium

An evaluation of the soils in the project area for use in growth medium was conducted. **Table 3.5-1** identifies the criteria used to determine suitability of soils for use as growth medium during reclamation.

Typical texture of map units within the project area consists of loamy soils, often with coarse fragment modifiers. Map units in the project area have been identified as having from 0 to more than 35 percent surface coarse fragments with some profile layers containing as much as 80 percent coarse fragments (USDA 2007a). Few map units in the project area have been identified as being hydric (USDA 2007b, NRCS 2006), and rare isolated soils in this area have a shallow depth to the high water table (USDA 2007a). Soil reaction indicates the potential for excessive acidity or alkalinity in the soil. The soils within the project area are generally neutral to alkaline with pH values ranging from 6.8 to 9.4 (USDA 2007a). The majority of map units have pH values of 7.8 to 8.4.

NRCS data describes the possible range of slope steepness of the mapped soils from 0 percent to over 50 percent (USDA 2007b). Maps of the project area show that the actual locations of most of the transmission line route would occur in areas that are considerably flatter than the extremely steep slopes within the range of general characteristics of some mapped soils.

The presence of fine-textured loams, in addition to consideration of other criteria used to determine the growth medium suitability, indicates that soils within the project area would generally have a good to fair rating for use as growth medium during reclamation.

TABLE 3.5-1 CRITERIA USED TO DETERMINE GROWTH MEDIUM SUITABILITY

PROPERTY	TOPSOIL/GROWTH MEDIUM SUITABILITY				RESTRICTIVE FEATURE[1]
	GOOD	FAIR	POOR	UNSUITABLE	
Texture	textures finer than sands and coarser than sandy clay and silty clay, with less than 35% clay	loamy textures	sand textures and clayey textures with <60% clay	>60% clay content	excessive sands or clays
Organic Matter Content	>3%	<3% but greater than 1%[1]	0.5 to 1.0%[1]	<0.5%[1]	low fertility
Coarse Fragments (0-40 inches)	<15% by volume	15-25% by volume	25-35% by volume	>35% by volume	equipment restrictions and low fertility
Depth to High Water Table	--	--	<1 foot to high water	perennial wetness	equipment restrictions
Soil Reaction – pH[2] (0-40 inches)	6.0 to 8.0	5.0 to 6.0 8.0 to 8.5	4.5 to 5.0 8.5 to 9.0	<4.5 or >9.0	excessive acidity or alkalinity
Slope Steepness	<8% slope	8 to 25% slope	25 to 40% slope	>40% slope	equipment restrictions

Source: (USDA 2003, USDA 2005)
[1] As defined in the Soil Survey Manual (USDA 2003) and National Soil Survey Handbook (USDA 2005).
[2] pH in standard units.

The depth of growth medium needed for reclamation is dependent on the characteristics of the material to be covered and the effectiveness of the bond between the base material and the applied growth medium. A 6-inch depth of loose topsoil will settle an inch or two; therefore, 3 to 6 inches after settling is sufficient with adequate irrigation to establish grasses and legumes (State of Nevada 1994). **Table 3.5-2** shows the volume of material required to obtain various depths of growth medium applied during reclamation activities.

Rock outcrops are not suitable for recovery and use as growth medium. Based on review of available soil data, most recovered soil material would be classified as good, fair, or poor for use as growth medium during reclamation activities. Mixing of soil map units during salvage operations would dilute excessive coarse fragment content and distribute organic matter throughout the recovered material, resulting in maximum recovery volumes.

TABLE 3.5-2 MATERIAL VOLUME FOR APPLICATION OF GROWTH MEDIUM TO VARIOUS DEPTHS

DESIRED DEPTH OF GROWTH MEDIUM APPLICATION (INCHES)	CUBIC YARDS PER 1,000 SQUARE FEET REQUIRED	CUBIC YARDS PER ACRE REQUIRED
1	3.1	134.4
2	6.2	268.9
3	9.3	403.3
4	12.4	537.8
5	15.5	672.2
6	18.6	806.7

Source: State of Nevada 1994

3.5.3.3 Erosion Potential

The overall hazard of erosion for soils has previously been determined by soil surveys conducted within the project area (USDA 2007a). In general, upland areas are more susceptible to erosion than lowland sites, and areas with higher coarse fragment content and lower slope angle have lower potential for water erosion hazard. Areas where herbaceous vegetation is sparse or absent are most susceptible to wind and water erosion, and to drying and crusting (BLM 2008a, USDA 2007c).

Living organisms and their byproducts form biological crusts at the surface of the soil by binding soil particles together with organic materials (BLM 2008a). The ecological function of these crusts is to stabilize the soil, increase water infiltration, and enhance plant establishment. Biological crusts, although they tolerate harsh growing conditions, are not well adapted to physical disturbances (BLM 2008a). The potential for soil erosion increases when the crusts are diminished (BLM 2008a).

General review of soil textures within the project area shows a predominance of silt loam and loamy soils, many with coarse fragment modifiers, indicating a range of moderate to high erosion potential ratings utilizing this method of erosion determination. A high percentage of coarse fragments and/or dense vegetation on the soil surface would further reduce the erosion potential by wind and water.

Studies conducted in the BLM Ely District indicate that sediment yields from juniper and pinyon-juniper woodlands yielded 0.003 to 0.42 ton per acre of sediment, and sagebrush communities yielded 0.01 to 0.64 ton per acre (BLM 2008a). The highest infiltration rates and lowest sediment production were observed in the Steptoe watershed southeast of Ely, and the lowest infiltration rates and highest sediment production were found in the Duckwater watershed

southeast of Eureka (BLM 2008a). The least sediment yield numbers were found in big sagebrush and crested wheatgrass vegetation communities. Erosion and sediment yields within a watershed vary according to precipitation, soils, topography, and vegetation characteristics.

3.5.4 Specific Project Area Conditions

The transmission line alignments would travel through areas of multiple soil map units (see Figures in **Appendix 3A**). **Table 3.5-3** identifies soil map units that typify soils within the proposed boundaries of the ON Line Project.

TABLE 3.5-3 SELECTED MAP UNITS THAT TYPIFY SOILS WITHIN THE PROJECT AREA

PROJECT ELEMENT	MAP UNIT NUMBER / MAP UNIT NAME
Segment 6C	286 - Palinor-Shabliss association
Segment 6C	124 - Tecomar-Pookaloo association
Segment 6C	1240 - Biken association
Segment 6C	3091 - Univega-Clowfin-Molion association
Segment 6C	3972 - Linoyer very fine sandy loam, 0 to 4 percent slopes
Segment 6C	3970 - Linoyer-Rebel association
Segment 6C	3334 - Handpah-Palinor-Parisa association
Segment 6C	3974 - Linoyer-Kunzler association
Segment 6C	3212 - Kunzler-Candlaria association
Segment 6C	3220 - Stewval-Beelem association
Segment 6C	3311 - Ursine-Cliffdown association
Segment 6C & 8	1032 - Ursine-Mezzer-Armspan association
Segment 8	1151 - Watoopah-Zoda-Sevenmile association
Segment 8	1022 - Cliffdown-Geer association
Segment 8 & 9B	1473 - Tybo-Leo association
Segment 9B	1534 - Delamar-Koyen association
Segment 9B	1510 - Koyen gravely sandy loam, 2 to 4 percent slopes
Segment 9B & 10 (sub-alt)	1520 - Fax-Yody-Broland association
Segment 10 (sub-alt)	1100 - Geta-Arizo association
Segment 10 (sub-alt)	1010 - Tencee-Weiser association
Segment 11	1000 - Weiser-Tencee-Arizo association
Segment 11	CTC - Colorock-Tonopah association, moderately sloping
Segment 11	BRB - Bard-Tonopah association, gently sloping

The Palinor-Shabliss association soils are shallow, well-drained soils. Soil depth is typically less than 20 inches, underlain by duripan. The Palinor texture is gravelly loam to extremely gravelly fine sandy loam. These soils are fan remnants on 2 to 8 percent slopes. The Shabliss soil texture is a gravely loam which is a fan remnant on 2 to 8 percent slopes (USDA 2007a).

Soils in the Tecomar-Pookaloo association are shallow, well-drained soils that formed in residuum and colluvium derived from limestone and dolomite. Soil depth is typically less than 20 inches, underlain by fractured limestone. Tecomar texture is extremely stony silt loam with very high surface runoff and moderate permeability. The soil surface is partially covered with 25 percent pebbles and 15 percent cobbles and stones and these soils are found on mountains and hills with slopes of 8 to 50 percent. Pookaloo soil texture is very gravelly loam and the soil surface contains approximately 60 percent pebbles and 5 percent cobbles, yielding very high runoff and moderate permeability (USDA 2007a).

The Biken association consists of well-drained shallow soils. The soil depth is usually 18 to 20 inches deep and is on top of paralithic bedrock. These soils are found on hills with slopes typically ranging from 4 to 15 percent (USDA 2007a).

Soils in the Univega-Clowfin-Molion association are shallow to deep, well-drained soils that are located on fans. These soils are underlain by duripan. Univega texture is gravelly fine sand to sandy loam and is found on fan remnants on 2 to 8 percent slopes. The Clowfin texture is a deep sandy loam to a stratified very gravelly sandy loam to very gravelly loam. It is found on 2 to 8 percent slopes on inset fans. Molion texture is a loam to very gravelly sandy loam located on fan remnants on slopes of 2 to 8 percent (USDA 2007a).

The Linoyer very fine sandy loam, 0 to 4 percent, consist of well drained, more than 80-inch deep soils, that are located on inset fans. They are made up of very fine sandy loam, to silty loam, to extremely gravelly loamy sand (USDA 2007a).

Soils in the Linoyer-Rebel association are deep and well drained. These soils are more than 80 inches deep and are located on inset fans on slopes of 0 to 2 percent. The Linoyer texture is made up of very fine sandy loam, to silty loam, to extremely gravelly loamy sand on inset fans with slopes of 0 to 2 percent. The parent material is of mixed colluvium. Rebel texture consists of sandy loam to loam on inset fans with slopes of 0 to 2 percent (USDA 2007a).

Soils in the Handpah-Palinor-Parisa association are comprised of shallow to medium soils that are formed on fan remnants. These soils are up to 40 inches deep on slopes 2 to 8 percent and are underlain by duripan. The Handpah texture, derived from mixed colluvium, is composed of shallow gravelly fine sandy loam, gravelly clay loam, and very gravelly sandy loam. It is formed on fan remnants on slopes of 2 to 8 percent. The Palinor texture is gravelly loam to extremely gravelly fine sandy loam. These soils are found on fan remnants on 2 to 8 percent slopes and are a product of weathered limestone alluvium. Parisa texture is comprised of gravelly loam to very gravelly loam. The parent materials are alluvium derived from limestone. These are well-drained medium depth soils located on fan remnants on slopes of 2 to 8 percent (USDA 2007a).

The Linoyer-Kunzler association soils are composed of well-drained deep soils, more than 80 inches deep, and are formed on inset fans and stream terraces of 0 to 4 percent slopes. The Linoyer texture is made up of very fine sandy loam, to silty loam, to extremely gravelly loamy sand on inset fans with slopes of 0 to 4 percent. The parent material is of mixed colluvium. The Kunzler texture, which forms on river terraces, is a deep well drained soil on slopes of 0 to 4 percent. It consists of loam to a very gravelly loam that is derived from mixed alluvium (USDA 2007a).

The Kunzler-Candelaria association, which forms on river terraces and fan remnants, consists of deep well drained soils on slopes of 0 to 4 percent. The Kunzler texture, which forms on river terraces, is a deep, 80 inches and deeper, well-drained soil on slopes of 0 to 4 percent. It consists of loam to a very gravelly loam that is derived from mixed alluvium. The Candelaria texture is a very gravelly sandy loam, gravelly fine sandy loam, extremely gravelly sandy loam, and stratified extremely gravelly sand to very gravelly loamy coarse sand. The surface area is covered with 2 percent cobbles, stones, and boulders. The texture is more than 80 inches deep and well drained and forms on fan remnants from eroded mixed alluvium on 0 to 4 percent slopes (USDA 2007a).

Soils in the Stewval-Beelem association are well drained and shallow. Lithic bedrock underlies the association at depths of 9 to 14 inches. These soils are formed on hills on slopes ranging from 8 to 50 percent. The Stewval texture with a 6 percent surface cover of cobbles, stones, and

boulders is well drained and ranges in a thickness of 4 to 14 inches. It is comprised of very stony fine sandy loam, very gravelly clay loam, and unweathered bedrock. It forms on hills with slopes ranging from 8-30 percent. The Beelem texture consists of cobbly sandy loam, gravelly sandy loam, and unweathered bedrock. It is well drained and develops in thicknesses of 4 to 9 inches on hills with slopes of 15 to 50 percent (USDA 2007a).

The Ursine-Cliffdown association soils consist of well to somewhat excessively drained shallow to deep soils. The soils are formed on fan remnants and inset fans with slopes ranging from 0 to 15 percent. The Ursine texture is well drained, 14 to 20 inches thick, and is underlain by duripan. It consists of very gravelly loam and gravelly loam on 4 to 15 percent slope fan remnants. The Cliffdown texture, which forms on inset fans, is somewhat excessively drained and deep. It is over 80 inches deep and consists of very gravelly sandy loam and stratified gravelly sandy loam to very fine sandy loam (USDA 2007a).

Soils in the Ursine-Mezzer-Armspan association are well drained and shallow to deep. The Ursine texture is well drained, 14 to 20 inches thick, and is underlain by duripan. It consists of very gravelly loam and gravelly loam on 2 to 8 percent slope fan remnants. The Mezzer texture forms on inset fans on slopes from 2 to 8 percent. The texture is deep and well drained and consists of very gravelly sandy loam, gravelly fine sandy loam, extremely gravelly sandy loam, extremely gravelly fine sandy loam, very gravelly loamy coarse sand, and extremely gravelly sandy loam (USDA 2007a).

Soils in the Watoopah-Zoda-Sevenmile association are shallow to deep, well-drained soils that are located on fan remnants and inset fans. The Watoopah texture is a fan remnant on slopes from 0 to 4 percent. It is well drained, more than 80 inches deep and is derived from alluvium from volcanic ash, welded tuff, and rhyolite. It is comprised of gravelly sandy loam, sandy loam, gravelly sandy loam, and stratified very gravelly coarse sand to coarse sandy loam. The Zoda texture is a fan remnant on slopes from 2 to 8 percent. It is well drained, 20 to 40 inches deep, underlain by duripan, and is derived from welded tuff. The texture consists of gravelly ashy sandy loam and gravelly ashy sandy clay loam. The Sevenmile texture is well drained, more than 80 inches deep, and forms inset fans with slopes 0 to 2 percent. It consists of Ashy sandy loam, ashy loam, and stratified extremely gravelly ashy loamy coarse sand to ashy silt loam that is derived from alluvium of welded tuff and some limestone and quartzite (USDA 2007a).

The Cliffdown-Geer association, which forms fan remnants and fan terraces, consists of deep well drained soils on slopes of 0 to 8 percent. The Cliffdown texture, which forms fan remnants, is somewhat excessively drained and deep. It is over 80 inches deep and consists of very gravelly sandy loam and stratified gravelly sandy loam to very fine sandy loam and is derived from alluvium of mixed rock sources. The Geer texture is a fan skirt on slopes from 2 to 4 percent. It is well drained, more than 80 inches deep, and is derived from welded tuff and limestone with a minor component of volcanic ash. The texture consists of fine sandy loam (USDA 2007a).

Soils in the Tybo-Leo association are shallow to deep and well drained to excessively drained on fan remnants and inset fans. The Tybo texture is a fan remnant on slopes from 2 to 4 percent. It is well drained, 8 to 20 inches deep, underlain by duripan, and is derived from quartzite, limestone, and welded tuff. It is composed of gravelly coarse sandy loam and gravelly sandy loam. The Leo texture is excessively drained and is more than 80 inches thick. It is comprised of very gravelly sandy and stratified extremely gravelly coarse sand to fine sandy loam. It forms on inset fans with slopes ranging from 2 to 4 percent from alluvium derived from mixed rock sources (USDA 2007a).

Soils in the Delamar-Koyen association are shallow to deep and well drained on fan remnants and inset fans. The Delamar texture is a fan remnant on slopes from 0 to 2 percent. It is well drained, 20 to 40 inches deep, underlain by duripan, and is derived from alluvium. It is composed of gravelly sandy loam and gravelly clay loam. The Koyen texture is a fan inset on slopes from 0 to 2 percent. It is well drained, more than 80 inches deep, and is derived from volcanic rock. It is composed of gravelly sandy loam, stratified gravelly loamy sand to loam and very gravelly loamy sand (USDA 2007a).

The Koyen gravely sandy loam, 2 to 4 percent slopes, is a fan skirt on slopes from 2 to 4 percent. It is well drained, more than 80 inches deep, and is derived from volcanic rock. It is composed of gravelly sandy loam stratified gravelly loamy sand to loam and very gravelly loamy sand (USDA 2007a).

The Fax-Yody-Broland association consists of well-drained soils that were formed in alluvium from dominantly volcanic rock sources. Typical soil texture ranges from gravelly sandy loam, very gravelly loam to very gravelly coarse sandy loam. Yody and Fax soils are moderately deep, well-drained soils and typically have a duripan layer located below 22 inches. Permeability is moderate to moderately slow with medium to high runoff. Broland soils range from shallow to a strongly cemented duripan layer located between 19 to 40 inches below the soil surface. Runoff is medium to very high with moderately slow permeability (USDA 2007a).

Soils in the Geta-Arizo association are deep well drained to excessively drained on fan skirts and drainageways. The Geta texture is a fan remnant on slopes from 0 to 2 percent. It is well drained, more than 80 inches deep, and is derived from mixed alluvium. It is composed of very fine sandy loam and gravelly sandy loam. The Arizo texture forms in drainageways on slopes from 0 to 2 percent. It is excessively drained, more than 80 inches deep, and is derived from alluvium. It is composed of very gravelly loamy sand, stratified cobbly coarse sand to extremely gravely sand (USDA 2007a).

The Tencee-Weiser association consists of well-drained shallow to deep soils. The soils are formed on fan remnants with slopes ranging from 2 to 8 percent. The Tencee texture is a fan remnant on slopes from 2 to 8 percent. It is well drained, 7 to 20 inches deep, underlain by petroclastic, and is derived from alluvium. It is composed of very cobbly sandy loam and very gravelly sandy loam. The Weiser texture is a fan remnant on slopes from 2 to 8 percent. It is well drained, more than 80 inches deep, and is derived from limestone and dolomite. It is composed of very cobbly sandy loam, stratified extremely gravelly sandy loam to very gravely fine sandy loam (USDA 2007a).

Soils in the Weiser-Tencee-Arizo association are shallow to deep, well drained to excessively drained on fan remnants and drainageways. The Weiser texture is a fan remnant on slopes from 2 to 8 percent. It is well drained, more than 80 inches deep, and is derived from limestone and dolomite. It is composed of very cobbly sandy loam, stratified extremely gravelly sandy loam, to very gravely fine sandy loam. The Tencee texture is a fan remnant on slopes from 2 to 8 percent. It is well drained, 7 to 20 inches deep, underlain by petroclastic, and is derived from alluvium. It is composed of very cobbly sandy loam and very gravelly sandy loam. The Arizo texture forms in drainageways on slopes from 0 to 2 percent. It is excessively drained, more than 80 inches deep, and is derived from alluvium. It is composed of very gravelly loamy sand, stratified cobbly coarse sand, to extremely gravely sand (USDA 2007a).

The Colorock-Tonopah association consists of alluvial soils that are deep and characteristically well drained with low to medium runoff and moderate to moderately rapid permeability. Colorock soils have a very gravelly clay loam texture with a hardpan at approximately 15 inches. Typical

vegetation on these soils is stunted. Tonopah soils are very gravelly sandy loam with an average rock fragment content consisting of 40 to 65 percent pebbles and up to 25 percent cobbles (USDA 2007a).

The Bard-Tonopah association soils are gently sloping, shallow to deep, and well drained on fan remnants. The Bard texture is a fan remnant on slopes from 2 to 4 percent. It is well drained, 14 to 20 inches deep, underlain by petroclastic, and is derived from limestone and dolomite. It is composed of very stony loam and fine sandy loam. The Tonopah soils are very gravelly sandy loam with an average rock fragment content consisting of 40 to 65 percent pebbles and up to 25 percent cobbles (USDA 2007a).

The Robinson Summit Substation area consists of the Segura-Upatad-Cropper and Fax-Yody-Broland associations (**Appendix 3A, Figure 1**). These soils are shallow, well-drained soils formed in residuum and colluvium from welded tuff, andesite, quartzite, conglomerate and rhyolite on mountains. Segura texture is very stony sandy clay loam on slopes of 4 to 50 percent with medium to very high runoff and moderate permeability. Typical soil profile is approximately 10 inches deep with rock fragment content of 10 to 35 percent. Upatad soils are very gravelly silt loams with 40 percent pebbles and 10 percent cobbles on the soil surface. Runoff is medium with moderately slow permeability. The Cropper soil has a very cobbly loam, extremely stony texture, and the soil surface is covered with 20 percent pebbles, 15 percent cobbles, and 5 percent stones. Cropper soils have very high surface runoff and moderately slow permeability (USDA 2007a).

The RSS-Site B sub-alternative area consists almost entirely of the Palinor-Shabliss association (**Appendix 3A Figure 1**; NRCS 2010). These soils are well-drained gravelly loam fan remnants on 2 to 8 percent slopes. They are non-saline to very slightly saline. There are also small areas of Heist silt loam (0 to 4 percent slopes), the Duffer-Uwell association, the Tecomar-Pookaloo association, and Upatad-Atlow-Pioche association.

The Falcon Substation area consists of the Cluro association. These silt loam soils are slightly saline, somewhat poorly drained, with a moderately slow permeability. Saltation has occurred in low-lying areas. Cryptogamic (biotic) soil crusts are present in undisturbed soils surrounding the site (JBR 2009).

3.6 Air Resources

3.6.1 Area of Analysis

For background, an analysis of the local and regional climate is documented. Climatic trends are discussed on that scale and in a broad sense on a larger regional and national scale.

The area of analysis includes the proposed and alternative transmission line alignments from Robinson Summit in White Pine County south to the Harry Allen substation in northeastern Clark County, and a comparable radius around the Falcon substation. The direct impact area for this analysis includes everywhere within 5 miles of proposed project activities, capturing the areas impacted by the dust and equipment exhaust that represent the primary air emissions for the Proposed Action.

3.6.2 Data Sources and Methodology

The primary direct indicators of climate are the mean temperature, precipitation, and moisture levels. Indirect climatic indicators include the flora, fauna, and vegetation patterns that are naturally supported.

The regulatory framework for air quality includes national rules, regulations, and standards promulgated by the Environmental Protection Agency (EPA), and programs, rules, and regulations implemented by the Nevada Department of Environmental Quality, Bureau of Air Pollution Control (NDEQ BAPC) and local air quality regulatory agencies including the Clark County. The guiding national rules follow from the Clean Air Act, defining ambient air quality standards, requirements for local air quality programs and for operations capable of emitting air pollutants to protect the public, including sensitive individuals.

The primary indicator of air quality impacts from the Proposed Action will be compliance with the EPA National Ambient Air Quality Standards (NAAQS), and the Nevada Ambient Air Quality Standards (AAQS). Prevention of Significant Deterioration (PSD) Significant Contribution Levels (SILs) and Air Quality Related Values (AQRV) impact limits would not be applicable because the Proposed Action is expected to have minimal air quality emissions, and result in minimal operational impacts. These ambient air quality standards are set for criteria air pollutants: nitrogen dioxide, sulfur dioxide, particulate matter, carbon monoxide, ozone, and lead, and enforced through air permitting requirements to protect public health. The primary regulated particulate has been PM_{10}, particulate matter 10 microns or less in diameter. Materials in this size range are considered inhalable because they generally pass into the human respiratory system. Standards for $PM_{2.5}$, a subset of PM_{10} including the finer size particles, are being phased in by EPA. For this analysis, PM_{10} impacts will be used as an indicator of $PM_{2.5}$ impacts. That assumption is quite conservative for fugitive dust impacts, which are primarily made up of larger particle sizes. Combustion exhaust, though, tends to include a larger percentage of particulates in the $PM_{2.5}$ range.

Table 3.6-1 summarizes the SILs, NAAQS, Nevada AAQS, and PSD increments for all EPA defined criteria air pollutants.

TABLE 3.6-1 AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING PERIOD	NATIONAL AAQS ($\mu G/M^3$)	NEVADA AAQS ($\mu G/M^3$)
NO_2	Annual	100	100
SO_2	Annual	80	80
	24 hours	365(b)	365
	3 hours	1,300(b)	1,300
CO	8 hours	10,000(b)	10,000(c)
	1 hour	40,000(b)	40,000
PM_{10}	Annual	Revoked(d)	50
	24 hours	150(e)	150
$PM_{2.5}$	Annual	15(f)	15(e)
	24 hours	35(g)	35(f)
Lead	Quarterly	1.5	1.5
O_3	1 hour (j)	235(h) (0.12 ppm)	235(h) (0.12 ppm)
	8 hour	147(i) (0.075 ppm)	147(i) (0.075 ppm)

$\mu g/m^3$ - Microgram per cubic meter NA - Not applicable

a Source: EPA 1990
b Not to be exceeded more than once per calendar year
c 6,670 $\mu g/m^3$ at areas equal to or greater than 5,000 feet above mean sea level
d EPA revoked this standard effective December 17, 2006
e Not to be exceeded more than once per calendar year on average over three years
f the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors
g the 3-year average of the 98th percentile at each population-oriented monitor within an area
h The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is $\leq$ 1. This standard is revoked as of June 15, 2005 in all areas except 8-hour ozone non-attainment areas
i The 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year
j Ozone 1-hour NAAQS applies only in ozone 8-hour non-attainment areas

3.6.3 Existing Conditions

3.6.3.1 Climate

The project area includes a dry four-season environment with cold winters near the existing Falcon and proposed Robinson Summit Substations and in the higher northerly reaches of the transmission line segments, with the lower southerly end featuring a dry, desert climate. Mild winters occur only on the southerly reaches of the transmission line segments well to the south of the Robinson Summit Substation terminus in the north. Precipitation levels are light in the valleys, and slightly higher in the surrounding mountains. **Table 3.6-2** summarizes meteorological conditions within and near the project area.

TABLE 3.6-2 METEOROLOGICAL CONDITIONS WITHIN AND NEAR THE PROJECT AREA

MONITOR	ELEV (FT)	WINTER AVERAGE	SPRING AVERAGE	SUMMER AVERAGE	FALL AVERAGE	ANNUAL AVERAGE
Mean Seasonal Temperature Average (°F)[1]						
Beowawe	4,700	33.3	55.1	66.3	37.9	48.2
Ruth	6,830	26.8	47.8	60.6	32.5	42.0
Lund	5,570	33.7	54.0	65.9	39.1	48.2
Sunnyside	5.310	35.1	56.6	68.1	40.1	50.0
Alamo	3,450	41.4	63.3	74.3	47.6	56.7
Valley of Fire SP	2,000	52.9	76.8	88.9	58.3	69.2
Mean Seasonal Precipitation Average (inches)[1]						
Beowawe	4,700	2.04	2.50	1.03	2.20	7.57
Ruth	6,830	3.33	3.19	2.62	2.68	11.92
Lund	5,570	2.66	2.77	2.35	2.27	10.07
Sunnyside	5.310	2.55	2.12	2.45	2.16	9.27
Alamo	3,450	1.98	1.21	1.55	1.53	6.27
Valley of Fire SP	2,000	1.97	2.79	2.16	1.90	8.81
Mean Seasonal Snowfall / Snow Cover (inches)[1]						
Beowawe	4,700	10.7 / 1.0	1.1 / 0	0 / 0	5.3 / 0.3	17.0 / 0
Ruth	6,830	28.3 / 2.7	8.4 / 0	0.1 / 0	17.8 / 1.0	50.4 / 1
Lund	5,570	10.5 / 0	2.5 / 0	0 / 0	5.2 / 0	18.2/ 0
Sunnyside	5.310	5.6 / 0.3	1.3 / 0	0 / 0	4.7 / 0	15.5 / 0
Alamo	3,450	5.6 / 0.3	0.4 / 0	0 / 0	1.5 / 0	7.4 / 0
Valley of Fire SP	2,000	0.2 / 0	0 / 0	0 / 0	0.2 / 0	0.4 / 0

Source: Western Regional Climate Center (WRCC) 2009
°F = degrees Fahrenheit

The dry climate leads to a large diurnal temperature range, with daytime high temperatures averaging about 30 degrees higher than daily minimum temperatures. The large elevation differences between the valley floors and the surrounding ridge tops result in moderate and steady winds, with evening inversions in the valley bottoms. Ground level wind patterns in the region are channeled by the valleys and mountain ranges in this basin and range country. Mean wind speeds are 9.5 miles per hour in Ely and 10.1 miles per hour in Las Vegas. Climatic conditions have historically fluctuated, evolving into the current conditions as described above. Evidence of historic variations includes multiple ice ages in the recent geologic past and those fluctuations continue. Current evidence seems to indicate an increase in mean global temperature over the last century which might be accelerating in pace. Seven of the ten hottest years on record occurred in the last decade. Temperature changes can affect the quantity and distribution of precipitation because of associated weather pattern changes. At the same time, mean ambient concentrations of greenhouse gases, which let in short wave radiation from the sun, but block outgoing long wave radiation, have been documented to be increasing.

Figure 3.6-1 documents national trends in temperatures measured at National Weather Station (NWS) sites since the early 20th century. Mean temperature rises are seen across the country, with some of the most significant changes since the 1940s, averaging about a 1-degree increase per decade, in eastern and central Nevada. Similar NWS data since the 1930s shows mean precipitation increases have been noted since the 1930s across most of the eastern and central U.S. While much of the western U.S. has experienced flat or downward trending precipitation levels, northeastern Nevada has seen a mean precipitation increase of less than one inch per decade (NOAA 2008).

3.6.3.2 Air Quality

Current Local and Regional Air Quality

Ambient air quality monitors in the Steptoe Valley in White Pine County, measuring SO_2, NO_2, PM_{10}, CO, and ozone were installed to assess background air quality close to each of the EEC plant site alternative locations, which are situated northeast of the ON Line Project's northern terminus. These monitors indicate air quality is minimally affected by all but one criteria air pollutant. For all of the averaging periods, the only pollutant measured at or above half the NAAQS was 1-hour average ozone. No other measured pollutant value reached 25 percent of the NAAQS. Those air quality levels should be representative of conditions along the northern two thirds of the proposed transmission line, which feature a comparable level or less development and are comparably distant from major sources of air pollutants including regional power plants, large industry, or large urban areas.

Clark County is currently in attainment or unclassified for all air pollutants. Few, if any, measured values of volatile organic compounds (VOCs), hazardous air pollutant levels, or greenhouse gas concentrations representative of the project area are available.

One Federal Land Manager-identified sensitive Class II area, Great Basin National Park, exists 20 kilometers or more east of the general project area. Data from the Integrated Monitoring of Protected Visual Environments (IMPROVE) monitoring site at Great Basin National Park indicates good air quality with concentrations well below NAAQS standards, comparable to background values measured at the previously proposed EEC plant sites. However, measurements indicate at least slight visibility and acid deposition impacts have occurred as a result of regional industrial development including energy generation facilities. IMPROVE monitoring indicates ozone levels region-wide have the potential to approach or reach NAAQS standards.

Existing Air Pollutant Emission Sources

The only industrial sources near or within the ON Line Project would be the industrial activity in Ely and its vicinity at the northern terminus, and the energy and industrial facilities near the Harry Allen Substation in Clark County. Regional activity potentially affecting the project area include energy facilities, industrial and urban activity in Clark County, Las Vegas, St. George, Utah, and surrounding areas mostly affecting the southern end of the line; and regional energy facilities and possibly other large industrial activities having insignificant impacts along the rest of the impact area. Land use or development choices including grazing or development potentially affecting dust generation have localized effect in the project area, concentrated around the few isolated areas where such activities occur or have impacted soil stabilizing vegetation or cryptogrammic soils.

Rate of Long-Term Trend Temperature Change (top; °F per decade) & Precipitation Change (bottom; inches per decade) – FULL YEAR

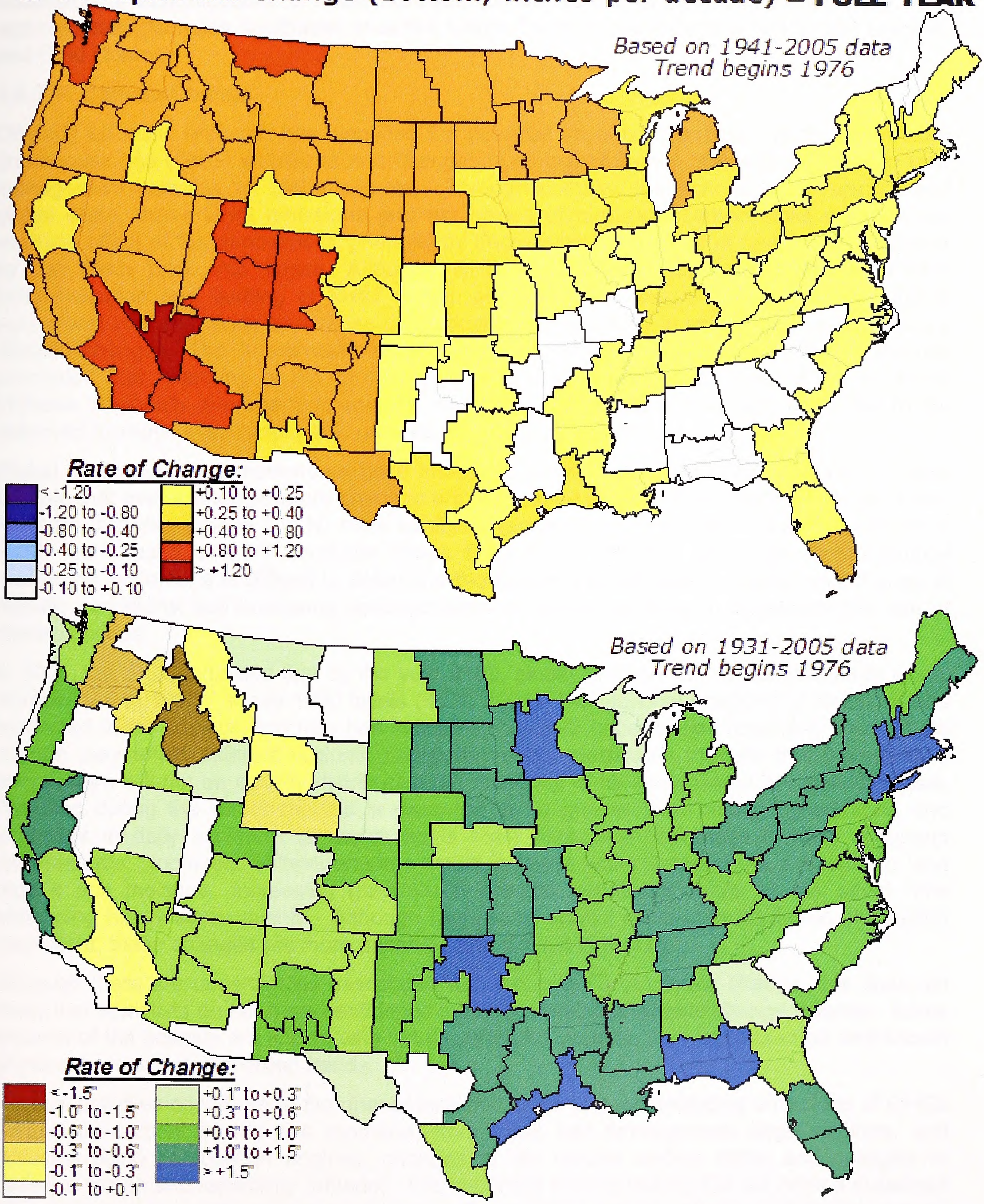


FIGURE 3.6-1
NATIONAL WEATHER SERVICE
LONG-TERM TEMPERATURE TREND DATA
ON LINE PROJECT

The Falcon Substation, in rural Boulder Valley, features a few acres of cleared ground. That substation is approximately 5 miles northeast of the coal-fired Newmont power plant, and approximately 10 miles southwest of active Carlin Trend mines including Goldstrike, Leeville, and Gold Quarry.

3.6.3.3 Climate Change

Ongoing scientific research has identified the potential impacts of anthropogenic (man-made) greenhouse gas (GHG) emissions and changes in biological carbon sequestration due to land management activities on global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO_2(e) (carbon dioxide equivalent) concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change (IPCC 2007) recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24° N) have exhibited temperature increases of nearly 2.1°F since 1900, with nearly a 1.8°F increase since 1970 alone. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase 2.5 to 10.4°F above 1990 levels (IPCC 2001). The National Academy of Sciences has confirmed these findings, but also has indicated there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures. Increases in temperatures would increase water vapor in the atmosphere, and reduce soil moisture, increasing generalized drought conditions, while at the same time enhancing heavy storm events. Although large-scale spatial shifts in precipitation distribution may occur, these changes are more uncertain and difficult to predict.

Although there are uncertainties associated with the science of climate change, this does not imply that scientists do not have confidence in many aspects of climate change science. Some aspects of the science are known with virtual certainty, because they are based on well-known physical laws and documented trends.

Several activities contribute to the phenomena of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires, and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over differing temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years.

3.7 Vegetation, Including Noxious and Non-Native, Invasive Weeds, and Special Status Plants

3.7.1 Area of Analysis

The area of analysis for vegetative communities, noxious and non-native, invasive weeds, and special status plants was defined as the project area, which is the potential disturbance footprint of any of the components of the Proposed Action or Action Alternative (see **Section 2.2.1** for detailed descriptions of project elements).

3.7.2 Data Sources and Methodology

The areas of analysis were evaluated through a combination of existing data review, including Southwest Regional GAP data (USGS 2004), soil surveys, previous biological surveys, recent aerial photointerpretation, and extensive biological field surveys conducted in fall 2006 and spring/summer 2007. Prior to conducting the vegetation surveys, soil maps and soil descriptions from *Soil Survey of Western White Pine County Area* (NRCS 1988) and *Soil Survey of Lincoln County, South Part* (NRCS 2000) were reviewed to familiarize survey crew members with the important vegetation, soil types, and landscape features contained in the survey area. The survey crew also reviewed the list of target noxious and non-native, invasive weeds, and target sensitive plant species and their habitat requirements. Pedestrian surveys were used when nearby access roads were unavailable, or when vegetation communities appeared highly variable, thus requiring detailed inspection to interpret tonal patterns from aerial photographs. Windshield surveys were used where vegetation communities appeared to be consistent and uniform across large expanses, and required only brief visual inspections to confirm aerial signatures. Community composition, ecological conditions, locations of noxious and non-native, invasive weeds, and the presence of wildlife were recorded during field surveys. Field-collected vegetative community data was combined with high-resolution National Agriculture Imagery Program (NAIP) aerial imagery dated April 2006 in order to photointerpret any non-field survey areas, or those areas where access was limited.

Vegetative community map units were based on Shiflet (1994) vegetation types, using dominant species to delineate discrete communities. The vegetative communities contained within the survey area are described in **Section 3.7.3.1** in order of prevalence within the project area.

The presence of noxious and non-native, invasive weeds (as defined by the State of Nevada in NAC 555.010) was identified within the areas of analysis by utilizing a number of methods and sources. Noxious and non-native, invasive weeds were recorded during biological field surveys for vegetative communities and special status plants, as well as by the Tri-County Weed Program, Ely office and by existing BLM mapping programs. Tri-County Weed Program surveys were based on the assumption that the most likely places that weeds might become established are near transportation systems, in disturbed areas, and areas near water; therefore, survey efforts were focused in these areas. Tri-County used the following criteria to determine the geographical extent of their surveys:

- Scout all roads, trails, by-ways, railways, utility corridors, or other transportation systems.
- Scout all known seeps, springs, streams, dry streambeds, riparian systems, irrigation canals, stock ponds, or any wetlands.

- Scout any additional man-made or natural disturbed areas including, but not limited to, campgrounds, corral systems, mining disturbances, chainings, seismic exploration sites, material stockpiles, and any other disturbances.
- Identify all paths, routes, or ways traveled by inclusion within the GPS database library. These document places that were surveyed where no invasive plant populations were found.
- Additional areas may be specifically selected to survey based upon such issues as likely rare or endangered species presence, or for other management considerations.

Existing data from each of these sources was reviewed for occurrences within the project area, as well as a 1,000-foot buffer surrounding these areas, and then combined with project-specific biological field survey data to determine the number and location of noxious and non-native, invasive weeds within the project area. Noxious and non-native, invasive weed species locations were recorded during baseline data surveys for vegetative communities and wildlife, via pedestrian and windshield surveys. Noxious and non-native, invasive weed occurrences were recorded with a Trimble GeoXT global positioning system, and data was collected for each observation, including species type, location, approximate area/density of infestation, date and time of observation, and name of observer.

Special status plant species (i.e., species with special status - listed as Threatened (T), Endangered (E), Proposed (P), and Candidate (C), or Sensitive (S) by government agencies), including those listed on the Nevada BLM sensitive species list and in the NAC 527.010 list of fully protected species of native flora, were identified through field surveys within known habitat types in the areas of analysis. Vegetative communities were used to identify potential suitable habitat for special status plant species within the areas of analysis described above, and field surveys conducted in spring and early summer 2007 focused on these areas.

3.7.3 Existing Conditions

3.7.3.1 Vegetation Communities/Cover Types

The following vegetative communities/cover types were mapped within the survey area, and they are described in detail below:

Wyoming Sagebrush	*Burn/Fire-Affected*
Creosote Bush	*Blackbrush*
Pinyon Juniper Woodland	*Rubber Rabbitbrush*
Greasewood	*Desert Playa*
Douglas Rabbitbrush	*Disturbed*
Joshua Tree	*Riparian*
Black Sagebrush	*Basin Big Sagebrush*
Winterfat	

Portions of the wetland and riparian communities may meet the criteria of jurisdictional waters of the U.S., including wetlands, subject to final verification by the Corps. Wetlands and Waters of the U.S. within the project area are discussed in detail in **Section 3.2**.

The following communities occur within the area of analysis, in order of prevalence within the project area. The locations of mapped vegetative communities within the project area are provided in the figures in **Appendix 3B**. The vegetation baseline report (JBR 2008) provides representative photographs of the most common vegetative communities found within the project area.

Wyoming Sagebrush Community

The Wyoming sagebrush (*Artemisia tridentata* var. *wyomingensis*) community is the most abundant vegetation community found within the project area. It occurs on shallow, stony soils of alluvial fan skirts and piedmonts, and concave side slopes of mountains. It is found throughout the northern project area through parts of the Egan and Grant Ranges, with the southernmost occurrence in Dry Lake Valley, in northern Lincoln County. Variations of this community type include both a low species diversity, monoculture aspect with a sparse to nonexistent herbaceous understory cover, and a Wyoming sagebrush dominated shrub community that includes Douglas rabbitbrush (*Ericameria viscidiflora*), black sagebrush (*Artemisia nova*), and Nevada ephedra (*Ephedra nevadensis*) as common associates. Dominant grass species include Indian ricegrass (*Achnatherum hymenoides*), Thurber's needlegrass (*Achnatherum thurberianum*), Sandberg's bluegrass (*Poa secunda*), and bottlebrush squirreltail (*Elymus elemoides*). Two cactus species are fairly common and include Simpson's hedgehog cactus (*Pediocactus simpsonii*) at higher elevations in the Egan Range, and a pricklypear (*Opuntia* spp.) found throughout the project area. Matted buckwheat (*Eriogonum cespitosum*) is also a common groundcover at higher elevations. Forbs include Douglas' pincushion (*Chaenactis douglasii*), phlox (*Phlox* spp.), and globemallow (*Sphaeralcea* spp.). Within the Egan Range, this community type is characterized by encroaching pinyon-juniper, with the Utah juniper (*Juniperus osteosperma*) more prevalent than the singleleaf pinyon (*Pinus monophylla*). Other variations of this community type include those with codominants in the shrub layer: Wyoming sagebrush-Douglas rabbitbrush, Wyoming sagebrush-black sagebrush, and Wyoming sagebrush-big sagebrush (*Artemisia tridentata* var. *tridentata*) community types.

Creosote Bush Community

The creosote bush (*Larrea tridentata*) community is the next most abundant vegetation community within the area of analysis. It was mapped in the southern extent of the project area within portions of the SWIP Utility Corridor and alternative transmission line corridors, in southern Lincoln and northern Clark counties, within Delamar, Kane Springs, and Coyote Spring valleys. This community is typically open and sparse, with an abundance of dry, gravelly, bare soil between plants. Occasional spring ephemeral herbaceous growth may occur, including forbs and graminoids.

Pinyon-Juniper Woodland Community

The singleleaf pinyon–Utah juniper community occurs primarily in mountainous regions, at elevations higher than 6,500 feet amsl (1,970 m). It was observed in the Egan, Grant, and Delamar Ranges. Upper mountain slopes and ridgelines generally support older, denser stands of pinyon-juniper, while mid and lower slopes represent more recent incursions into the adjacent sagebrush dominated community types. The shrub understory is composed variously of mountain sagebrush (*Artemisia tridentata* var. *vaseyana*) present on the deeper soils of concave slopes, with black and Wyoming sagebrush occurring on shallower, stony soils. Other common shrubs include Douglas rabbitbrush, bitterbrush (*Purshia tridentata*), Utah serviceberry (*Amelanchier utahensis*), and Mormon tea (*Ephedra viridis*). The understory is sparse compared to the adjacent sagebrush dominated community types. Common grasses include bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg's bluegrass, and Thurber's needlegrass.

Characteristic forbs include crag aster (*Aster scopularum*), cushion daisy (*Erigeron compactus*), basin butterweed (*Senecio multilobatus*), white stoneseed (*Lithospermum ruderale*), rockcress species (*Arabis* spp.), thickstem wild cabbage (*Caulanthus crassicaulis*), and *Phlox* species.

Douglas Rabbitbrush Community

The Douglas rabbitbrush community is found primarily occurring within Dry Lake Valley. This community is characterized by the presence of cryptogrammic crust with gravel and cobble ground cover, and a sparse herbaceous layer. Common to occasional shrub associates include winterfat (*Krascheninnikovia lanata*) and bud sagebrush (*Artemisia spinescens*). The herbaceous understory is variously dominated by several grasses including bottlebrush squirreltail and Indian ricegrass, with Sandberg bluegrass and needle and thread grass (*Achnatherum comata*) present. Additional common herbaceous species include herb Sophia.

Joshua Tree Community

The Joshua tree (*Yucca brevifolia*) community was observed in Delamar Valley, in the central portion of Lincoln County. This community possesses the Joshua tree as its highest stratum, although individuals are typically sparsely spread across the landscape. Common shrub associates included bursage (*Ambrosia dumosa*), broom snakeweed (*Gutierrezia sarothrae*), and horsebrush, with limited herbaceous growth.

Greasewood Community

The greasewood (*Sarcobatus vermiculatus*) community occurs mostly on alluvial flats exhibiting poorly drained soils. Greasewood tolerates the high salt and sodic attributes of these seasonally ponded soils. It was observed in portions of the White River Valley. On the lowest portion of the alluvial fan, low species diversity characterizes this community type with shadscale (*Atriplex confertifolia*), spiny horsebrush (*Tetradymia spinosa*) and herb Sophia (*Descurainia ophia*) as common associates. Descending to the valley floor, the greasewood community is characterized by the presence of a mixed greasewood-rabbitbrush (*Ericameria teretifolia* and *E. nauseosa* ssp. *consimilis*) dominated plant community. Soils exhibit a salty crust and inland saltgrass (*Distichlis spicata*) is common in the herbaceous layer along with other members of the goosefoot (*Chenopodiaceae*) family. On the valley floor, this community is characterized by flocculated soils and large, mostly bare soil interspaces, the mounds vegetated with greasewood and few herbaceous species.

Winterfat Community

The winterfat community is found on alluvial flats and lake plains that are fairly well drained. Winterfat was widely spread throughout the project area, from Jakes Valley in White Pine County south to southern Lincoln County, within the valley flats. This community type is characterized by a mound-intermound micro topography with mounds hosting both the shrub and herbaceous cover, and the intermound areas exhibiting mostly bare soil with some gravel present. It also occurs as small inclusions within the Wyoming sagebrush, black sagebrush, and Douglas rabbitbrush communities. Winterfat provides the bulk of the shrub cover, with Indian ricegrass as the dominant in the herbaceous understory. Additional common herbaceous species include herb Sophia and bottlebrush squirreltail. Winterfat and bud sagebrush provide codominant shrub cover with shadscale occasionally present as well.

Blackbrush Community

The blackbrush (*Coleogyne ramosissima*) community is found exclusively in southern Lincoln County, on the slopes of the Delamar Range. This community typically occurs upslope, or in more hilly conditions, than the creosote bush community, although not as high as the pinyon-juniper woodland community. Shrub coverage can be as much as 90-95 percent (Shreve 1942),

and only sparse brome (*Bromus* spp.) herbaceous cover was observed in this community within the area of analysis.

Black Sagebrush Community

The black sagebrush community was mapped from the northern terminus to northern Lincoln County, on the White River and Dry Lake valley margins. In addition, black sagebrush was commonly found intermixed with Wyoming sagebrush communities, especially on alluvial fan areas (i.e. the RSS-Site B sub-alternative study area). Black sagebrush is generally found in areas with shallow, rocky soils on alluvial fans and piedmonts, often derived from limestone. Characteristic shrub associates include bud sagebrush, Douglas rabbitbrush, winterfat, broom snakeweed, and green molly. Grasses found with black sagebrush included Sandberg's bluegrass, Indian ricegrass, Thurber's needlegrass, and bottlebrush squirreltail. Forbs include wild buckwheat (*Eriogonum* spp.) species, pincushion (*Chaenactis* spp.), rockcress, herb Sophia, and milkvetch (*Astragalus* spp.) species.

Burn/Fire-Affected Community

The burn/fire-affected community was observed in small areas within the Delamar Range, Kane Springs Valley, and Delamar Lake areas of southern Lincoln County, and within Hidden Valley in Clark County. The burn areas in Lincoln and Clark counties are recent, with little more than the charred remains of a former pinyon-juniper community, as well as a creosote bush community. Primary succession in the form of small forbs and herbaceous growth was observed in the early summer 2007 field surveys.

Desert Playa

The desert playa land type is an unvegetated expanse occurring at two locations within the southern extent of the SWIP Utility Corridor. Desert playa is the lowest part of an intermountain basin or bolson, which is frequently flooded by run-off from the adjacent highlands or by local rainfall. The surface is generally flat, with mud flats and locally small dunes (Allaby 1994). It was found on 0.4 percent of the land within the area of analysis and was mapped at Delamar Lake in Lincoln County and Dry Lake in Clark County.

Rubber Rabbitbrush Community

The rubber rabbitbrush community was observed at the White River crossing location in White River Valley. This community tended to be a monotypic shrub community, with occasional pockets of greasewood and Wyoming sagebrush interspersed. Soils are alkaline and soft, with moderate to poor drainage. Varying densities of graminoids were present in the herbaceous stratum, from less than 5 percent to nearly 100 percent coverage. Species include inland saltgrass, sedges (*Carex* spp.), arrowgrass (*Triglochin maritima*), alkali grass (*Puccinelia* sp.), and alkali cordgrass (*Spartina gracilis*).

Riparian Community

The riparian community was found on very limited areas within the area of analysis and may or may not be jurisdictional wetlands. It was mapped along larger drainages associated with the White River in White Pine and Nye counties.

Disturbed Lands

Disturbed lands are found in and around developed areas in Lincoln and Clark counties. This classification includes roads, gravel pits, buildings, parking lots, and similar human-caused disturbances. The burn/fire-affected and disturbed categories may include some vegetation component that is considered ruderal (e.g. herb Sophia, tumble mustard).

The potential for noxious and non-native, invasive weeds occurs along the unpaved roads present within the project area, and the areas disturbed as a result of utility installations, staging

areas, excavations, and grazing allotments. Invasive species including cheatgrass and halogeton (*Halogeton glomeratus*) are present providing sparse to dense cover within all community types, probably reflecting past livestock grazing history. Both paved and dirt road shoulders support Russian thistle (*Salsola kali*) and cheatgrass, with curlycup gumweed (*Grindelia squarrosa*) a common ruderal species. The occurrence of noxious and non-native invasive weeds in the project area is discussed below in **Section 3.7.3.2**.

While not mapped as a separate community type, utility easements and reclaimed roads have been revegetated with crested wheat grass (*Agropyron cristatum*) and common yarrow (*Achillea millefolium*). Native plant species colonizing these easements include Wyoming and mountain sagebrush, Douglas rabbitbrush, and bottlebrush squirreltail.

Basin Big Sagebrush Community

The basin big sagebrush community is found within the area of analysis where deep, well-drained soils are present. This community type occurs as a stringer community type adjacent to both perennial streams and adjacent to and within ephemeral drainages in valleys, fans, and lower mountain slopes. Characteristic species include greasewood and rubber rabbitbrush as common shrub associates, with bitterbrush occasionally present at higher elevation valley bottoms. Common grass associates include Great Basin wildrye (*Leymus cinereus*), Sandberg's bluegrass, and Indian ricegrass. Forbs include ragwort species (*Senecio* spp.), pincushion, milkvetch species, herb Sophia, and roughseed cryptantha (*Cryptantha flavoculata*).

3.7.3.2 Noxious and Non-Native, Invasive Weeds

The BLM defines an invasive weed as "a non-native plant that disrupts or has the potential to disrupt or alter the natural ecosystem function, composition and diversity of the site it occupies. Its presence deteriorates the health of the site, it makes efficient use of natural resources difficult and it may interfere with management objectives for that site. It is an invasive species that requires a concerted effort (manpower and resources) to remove from its current location, if it can be removed at all" (BLM National List of Invasive Weed Species of Concern). They have the ability to readily establish and spread rapidly, particularly in disturbed areas, and may cause damage to agriculture, range resources, and forestry, as well as increase fire susceptibility. Nevada BLM defines "noxious" weeds as those plant species "that interfere with management objectives for a given area of land at a given point in time" (http://www.nv.blm.gov/Resources/noxious_weeds.htm). Noxious and non-native, invasive weeds considered for effect under this study include:

- Plant species listed or considered as federal noxious weeds by the United States Department of Agriculture
- Plant species listed as noxious by the State of Nevada per NAC 555.010
- Plant species considered invasive weed species of concern to the BLM

Regulatory Framework

Federal Executive Order 13112, *Prevention and Control of Invasive Species* (3 February 1999), defines invasive species as "alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health." This order requires any federal agency whose action may affect the status of invasive species to undertake reasonable and appropriate measures to prevent or minimize the spread of invasive species, and to monitor and manage their conditions.

A number of additional federal laws address identification, treatment, and monitoring of invasive species, including the following:

- Lacey Act as amended (18 U.S.C. 42)
- Nuisance Prevention and Control Act of 1990 as amended (16 U.S.C. 4701 et. seq.)
- Federal Noxious Weed Act of 1974 as amended by the Food, Agriculture, Conservation and Trade Act of 1990 (Section 1453 "Management of Undesirable Plants on Federal Lands" U.S.C. 2801 et. seq.)
- Federal Plant Pest Act (7 U.S.C. 150aa et. seq.)
- Carlson-Fogey Act of 1968 (Public Law 90-583)
- Salt Cedar and Russian Olive Control Demonstration Act (Public Law 109-320)
- Safe, Accountable, Flexible, Efficient Transportation Equity Act (Public Law 109-59)
- Noxious Weed Control and Eradication Act (Public Law 108-412)

In addition to federal regulations, the State of Nevada Department of Agriculture serves to regulate noxious and non-native, invasive weed presence. According to NAC 555.010, it is the responsibility of the landowner, both public and private, to manage and control listed noxious species. The U.S. Department of Agriculture's *Federal Noxious Weed List, State Noxious Weed List*, and the BLM *Invasive Weed Species of Concern List* are provided in **Appendix 3C**.

Noxious and Non-Native, Invasive Weed Occurrence

Noxious and non-native, invasive weeds were observed throughout the area of analysis. **Table 3.7-1** shows the noxious and non-native, invasive weed species, which were identified through existing data and field observations within the area of analysis. The vegetation baseline report (JBR 2008) provides maps of known noxious and non-native, invasive weed occurrences and observations for the entire project area.

TABLE 3.7-1 NOXIOUS AND NON-NATIVE, INVASIVE WEEDS OBSERVED WITHIN THE PROJECT AREA

COMMON NAME	SCIENTIFIC NAME	NUMBER OF OBSERVATONS	OBSERVATION LOCATION
Canada Thistle	*Cirsium arvense*	60	White Pine, Lincoln
Red Brome	*Bromus rubens*	N/A*	Lincoln, Clark
Cheatgrass	*Bromus tectorum*	N/A*	White Pine, Lincoln, Clark
Halogeton	*Halogeton glomeratus*	N/A*	White Pine, Lincoln, Clark
Musk Thistle	*Carduus nutans*	60	White Pine, Lincoln
Russian Thistle	*Salsola iberica*	10	White Pine
Sahara Mustard	*Brassica tournefortii*	9	Clark
Salt Cedar (Tamarisk)	*Tamarisk* spp.	43	White Pine, Lincoln
Scotch Thistle	*Onopordum acanthium*	2	White Pine
Spotted Knapweed	*Centaurea stoebe*	20	White Pine, Lincoln
Whitetop	*Lepidium draba*	208	White Pine, Nye, Lincoln, Clark

*Due to the frequency of these species, they were not mapped in detail

Whitetop

The most common noxious and non-native, invasive weed known and/or observed within the area of analysis was whitetop (*Lepidium draba*). Whitetop was observed in White Pine, Nye, Lincoln, and Clark counties within or immediately adjacent to (within 1,000 feet), the following project elements:

- Segment 6C
- Segment 9D
- Segment 11

Canada Thistle, Musk Thistle

Also widely spread was Canada thistle (*Cirsium arvense*) and musk thistle (*Carduus nutans*). Thistles were observed in White Pine and Lincoln counties.

Canada thistle was observed in the following project elements:

- Robinson Summit Substation
- Segment 6C
- Segment 11

Musk thistle was observed along the following project segment:

- Segment 8

Salt Cedar

Salt cedar (*Tamarisk* spp.) was observed in and around drainages throughout White Pine County and in southern Lincoln County within the following project elements:

- Segment 6C
- Segment 9D
- Segment 10 (sub-alternative)

Salt cedar has infested the desert southwest, mostly along waterways and in arroyos with ephemeral flows, interrupting natural habitats. It is well adapted to alkaline and salty soils, heat and cold, and windy sites. Its aggressive, deep root system uses much ground water, often to the detriment of other species. In many sites, it forms a pure stand that is almost impenetrable. Few to no plants grow under its canopy because of the high concentrations of salt that builds up in the soil from its accumulated leaf litter and the excretion of salt from glands on the leaves.

Other Noxious and Non-Native, Invasive Weeds

Eight other noxious and non-native, invasive weeds were observed with occurrences totaling 20 or less per species.

Spotted knapweed (*Centaurea stoebe*) and Scotch thistle (*Onopordum acanthium*) were both observed within Segment 6C. Additionally, spotted knapweed was observed within Segments 8, 9D, and 10 (sub-alternative). Sahara mustard (*Brassica tournefortii*) was observed in Segment 11.

While not occurring on the Nevada Department of Agriculture Noxious Weed List, the U. S. Department of Agriculture now considers cheatgrass (a.k.a. downy brome [*Bromus tectorum*]) a

severe weed in several agricultural systems in North America, particularly pastureland, western rangeland, and winter wheat fields (Young and Clements 2007). Cheatgrass is also listed by the BLM as an Invasive Weed Species of Concern (**Appendix 3C**). This species is an aggressive invader of sagebrush, pinyon-juniper, and other shrub communities, where it can out-compete native grasses and shrubs (Young and Clements 2007). Cheatgrass depletes soil moisture and is highly flammable in late spring and early summer (Young and Clements 2007). While not mapped in detail, cheatgrass was observed in small (less than 0.5 acre.) inclusions throughout the areas of analysis in natural communities, as well as in larger (greater than 0.5 acre.) pockets of disturbed areas. Cheatgrass was most commonly observed within or nearby agricultural areas and pastureland (current or former) and disturbed land.

Halogeton is also not present on the Nevada list, but is listed by the BLM as an Invasive Weed Species of Concern (**Appendix 3C**). Halogeton is a common invasive in upland shadscale and saltbush communities throughout the Great Basin, introduced to Nevada in the 1930s (Nachlinger et al. 2001). Halogeton, like cheatgrass, was not mapped in detail, but was observed in small patches throughout the area of analysis, most commonly associated with areas of prior disturbance such as agricultural land, road banks, existing transmission lines, and range watering stations.

3.7.3.3 Special Status Plant Species

Specific field surveys (JBR 2008) for special status plant species were conducted on May 21 through May 29, 2007—the ideal time period within the growing season to observe and correctly identify most sensitive plants. The Robinson Summit Substation area was surveyed in detail. All other areas south of Robinson Summit were surveyed at a reconnaissance level (i.e., surveys focused on areas of high probability according to existing habitat conditions).

Prior to the survey, a list of target species was developed from the Nevada BLM Sensitive Species list and from NAC 527.010 – List of fully protected species of native flora. **Table 3.7-2** lists target species selected because their potential habitat occurs within the area of analysis. Target species, their habitats, and findings of the field survey are described below.

TABLE 3.7-2 TARGET SPECIES WITHIN THE AREA OF ANALYSIS

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS
White bear poppy	*Arctomecon merriamii*	BLM Sensitive	
Eastwood milkweed	*Asclepias eastwoodiana*	BLM Sensitive	
Threecorner milkvetch	*Astragalus geyeri var. triquetrus*		NAC 527.010
White River catseye	*Cryptantha welshii*	BLM Sensitive	
Las Vegas buckwheat	*Eriogonum corymbosum var. nilesii*	Candidate, BLM Sensitive	
Sunnyside green gentian	*Frasera gypsicola*		NAC 527.010
Tiehm's blazing star	*Mentzelia tiehmii*	BLM Sensitive	
Lahontan beardtongue	*Penstemon palmeri* var. *micranthus*	BLM Sensitive	
Parish phacelia	*Phacelia parishii*	BLM Sensitive	
Ute ladies-tresses orchid	*Spiranthes diluvialus*	Threatened	NAC 527.010

Source: Nevada BLM Sensitive Species List: NAC 527.010

Target Species and Habitats

The following species were identified as potentially occurring in habitats found within the area of analysis:

- White bearpoppy (*Arctomecon merriamii*) is known in Clark, Lincoln, and Nye counties, Nevada, as well as in California. An evergreen perennial herb, it occurs on alkaline clay and sand, gypsum, calcareous alluvial gravels, and carbonate rock outcrops.
- Eastwood milkweed (*Asclepias eastwoodiana*) is endemic to Esmeralda, Lander, Lincoln, and Nye counties, Nevada. A late-spring flowering perennial herb, it occurs in open areas on basic (pH 8 or higher) soils, frequently in small washes or other moisture-accumulating microsites.
- Threecorner milkvetch (*Astragalus geyeri* var. *triquetrus*) is known in Clark and Lincoln counties, Nevada, as well as in Arizona. It occurs on open, deep sandy soil or dunes, generally stabilized by vegetation and or a gravel veneer. It is dependent on sand dunes or deep sand in Nevada.
- White River catseye (*Cryptantha welshii*) is endemic to Nevada known from Nye, Lincoln, and White Pine counties. It occurs on calcareous soils in barren areas and open desert pavement within the black sagebrush community. The nearest occurrence to the project area is at Jakes Wash located approximately 15 miles south of Ely.
- Las Vegas buckwheat (*Eriogonum corymbosum* var. *nilesii*) is a recently identified, genetically unique subspecies of buckwheat endemic to southern Nevada. Growing from 1,900 to 3,900 feet amsl, it occurs on and near sparsely vegetated gypsum soil outcroppings, often forming low mounds or outcrops in washes and drainages, or in areas of generally low relief. The species is primarily found in the Las Vegas Valley (Clark County). Currently, only nine populations of Las Vegas buckwheat at 15 sites covering approximately 1,145 acres are known to exist.
- Sunnyside green gentian (*Frasera gypsicola*) is known from Nye and White Pine counties in Nevada, and possibly in Utah. It occurs on spongy silty clay soils of calcareous flats and barrens with low to no gypsum content.
- Tiehm's blazing star (*Mentzelia tiehmii*) is endemic to the White River Valley, in northeastern Nye and Lincoln counties, Nevada near Sunnyside Reservoir. It occurs primarily on hilltops of white soil and rock outcrops, with sparsely vegetated black sagebrush, Parry's rabbitbrush, and/or shadscale saltbush communities.
- Lahontan beardtongue (*Penstemon palmeri* var. *macranthus*) is a robust perennial herb found in the west central part of Nevada. It grows along washes, roadsides, and canyon floors, particularly on carbonate-containing substrates, usually where subsurface moisture is available throughout most of the year.
- Parish phacelia (*Phacelia parishii*) is known from White Pine and Nye counties, Nevada; and from San Bernardino County, California. The closest known location is in Spring Valley between the Schell Creek and Snake Ranges. It occurs on playas and in moist alkali meadows on the valley floor.
- Ute ladies tresses (*Spiranthes diluvialus*), a federally threatened species, is known to occur in Lincoln and possibly White Pine counties in Nevada. It also occurs in Colorado, Idaho, Montana, Nebraska, Utah, and Wyoming. It is found in moist, to very wet,

somewhat alkaline or calcareous native meadows near streams, springs, seeps, lake shores, or in abandoned stream meanders that still retain ample groundwater.

Special Status Species Existing Conditions

All potential habitats within the project area were inspected using NAIP color aerial imagery flown in 2006, and vegetation mapping field surveys to identify potential habitat areas. Locations of special status plants encountered during the survey were recorded with a Trimble GeoXT GPS receiver (see figures in **Appendix 3B**).

No special status plant species were found in the Robinson Summit Substation area nor are they expected to occur within the RSS-Site B sub-alternative area based upon the common habitat types observed and delineated in these areas.

The SWIP Utility Corridor and transmission line segments outside the SWIP Utility Corridor south of the Robinson Summit Substation were evaluated at a reconnaissance level. Habitat areas known to support sensitive plants were inspected, and areas with reasonable vehicle access were inspected for the presence or absence of habitat. White River catseye, a BLM sensitive species, was observed at the Jake's Wash area in White Pine County within Segment 6C. Tiehm's blazing star and White River catseye, BLM sensitive plants, were observed in the White River Valley area in White Pine and Nye counties, and also within Segment 6C. White bear poppy, a BLM sensitive species, was observed just west of Coyote Spring within Segment 9D.

<u>Las Vegas buckwheat</u>

Las Vegas buckwheat is not present within the project area; however, it occurs in close proximity to Segment 11, near the junction of US Highway 93 and State Route 168. Based on GIS data provided by the BLM, there are 36 known occurrences of Las Vegas buckwheat between 3,150 and 9,300 feet from the eastern edge of the Proposed Action ROW alignment and approximately 1,600 feet closer to the eastern edge of the Action Alternative transmission line alignment. These occurrences are within unique badland formations; therefore, unknown occurrences within the project area are not expected to occur.

3.7.4 Specific Project Area Conditions

Robinson Summit Substation

Within the Robinson Summit Substation survey area, four vegetation communities were observed. Wyoming sagebrush comprised the majority of the area and pinyon-juniper woodland occupied most of the remaining area. Small areas of black sagebrush and basin big sagebrush were also observed.

Transmission Line Alignments

The transmission line alignments have a northern terminus near Robinson Summit west of Ely and a southern terminus at the Harry Allen Substation in Clark County. Within the transmission line segments, 15 vegetative and/or land type communities were observed (see figures in **Appendix 3B**). Wyoming sagebrush, Douglas rabbitbrush, greasewood, and pinyon-juniper were the most prevalent in the northern portion of the project at Robinson Summit and in Segment 6C; Douglas rabbitbrush and Joshua tree were dominant in Segment 8; and creosote bush was dominant in Segments 9D and 11. The majority of Segment 9A is blackbrush with a burn area. A large burn area was observed in Segment 10 (sub-alternative); however, the northern area was dominated by Joshua tree and the southern area by creosote. Significant patches of winterfat were encountered in Segments 6C and 9B. Other communities observed

within the transmission segments included basin big sagebrush, black sagebrush, desert playa, disturbed land, riparian, and rubber rabbitbrush.

RSS-Site B Sub-Alternative
Within the RSS-Site B sub-alternative study area, four main vegetation communities were observed. Wyoming and black sagebrush were the dominant communities with areas of winterfat situated in drainages and pinyon-juniper woodlands on the higher slopes being observed.

Falcon Substation
Within the Falcon Substation expansion area, the greasewood community was observed.

3.8 Wildlife Resources, Including Special Status Wildlife, Migratory Birds, Fisheries, and Aquatic Species

As described in **Section 3.7**, 15 vegetation communities/cover types were mapped within the approximately 236 mile-long survey area. Elevations range from approximately 2,350 feet amsl at the southern-most portion of the Project at the Harry Allen Substation to about 7,850 feet near Silver King Pass. The project area terrain is highly diverse and includes high desert valleys, low alkali playas, steep rocky cliffs, and high mountain passes. The varying combinations of vegetation types, elevation, and terrain provide a wide variety of habitat for wildlife in the region.

The Nevada Department of Wildlife (NDOW) lists 161 species of mammals, 173 species of fish, 24 species of amphibians, 78 species of reptiles, and 456 species of bird within the state (NDOW 2007a). This section addresses wildlife species that occur, or have the potential to occur, in the project area. Wildlife species with special status (listed as Threatened (T), Endangered (E), Proposed (P), and Candidate (C), or Sensitive (S) by government agencies) are also addressed in this section. These species are referred to as special status species. Special status plants are discussed in **Section 3.7**.

It is important to note that the transmission line alignments occur predominantly within federally designated utility corridors. The ON Line Project occurs within these corridors for most of its length. Hence, the majority of sensitive habitat areas crossed by the transmission line alignment have been reviewed by federal agencies in these NEPA documents that direct project applicants to route projects in designated utility corridors.

3.8.1 Area of Analysis

The area of analysis for wildlife resources was defined as the project area (i.e., the footprint of the Proposed Action and Action Alternative components). Further, a 0.5-mile area on each side of the proposed transmission line was considered for greater sage-grouse, bats, and raptor species (including golden eagles).

A larger area, adjacent to the area of analysis identified above, was also generally considered in terms of existing habitats, known occurrences of sensitive wildlife species, etc. so that potential direct and indirect effects to wildlife resources could be analyzed in **Section 4.8**.

3.8.2 Data Sources and Methods

The areas of analysis were evaluated through a combination of existing data review, including information provided by the BLM, USFWS, NDOW, Nevada Natural Heritage Program (NNHP), and previous biological surveys; and extensive biological field surveys conducted in fall 2006 and spring/summer 2007. Prior to conducting wildlife surveys, various data from these sources

were reviewed to familiarize survey crew members with the habitat types and wildlife species that were likely to be encountered in the survey area. The survey crew familiarized themselves with special status wildlife species and their habitat types. Appropriate buffer zones surrounding the project features to be surveyed were plotted on maps, aerial photos, and GPS units.

Pedestrian surveys were used when nearby access roads were unavailable, when wildlife habitat communities appeared highly variable, or in the presence of existing or potential special status wildlife habitat. Windshield surveys were used where habitat communities appeared to be consistent and uniform across large expanses, and required only brief visual inspection. Vegetation species composition, ecological conditions, and the presence of wildlife were recorded during field surveys.

Special status wildlife species were identified through field surveys within known habitat types in the areas of analysis. Vegetative communities were used to identify potential suitable habitat for special status species within the areas of analysis described above. Specific ground-based field surveys within potentially suitable habitat were conducted for special status species and raptors. Surveys designed to identify active greater sage-grouse (*Centrocercus urophasianus*) leks within the project area were conducted during the 2007 breeding season.

Extensive raptor surveys were conducted primarily during the nesting season of 2007. Surveyors were provided the locations of known raptor habitat and nesting areas, and aerial photographs were analyzed in order to locate any additional potential raptor habitat. This information was then used in the field to locate and record raptor habitat that could be affected by the development of the ON Line Project.

3.8.3 Existing Conditions

3.8.3.1 Threatened, Endangered, Proposed, and Candidate Species

The USFWS identified four threatened, endangered, proposed, and candidate (TEPC) species that are known or expected to occur within the project area (USFWS 2007a. File No.1-5-07-SP-282). In addition, on March 5, 2010, the greater sage-grouse was listed as a candidate species. These species are listed in **Table 3.8-1**; background information on each species follows the table. **Appendix 3D** lists the TEPC Species that are known to occur within the two BLM Districts the project area occurs within, the general habitat types the species are generally found in, and whether any of these species were observed during field baseline surveys.

TABLE 3.8-1 TEPC WILDLIFE SPECIES LISTED AS OCCURRING WITHIN THE COUNTIES CROSSED BY THE ON LINE PROJECT

COMMON NAME	SCIENTIFIC NAME	USFWS STATUS
Greater sage-grouse	*Centrocercus urophasianus*	Candidate
Western yellow-billed cuckoo	*Coccyzus americanus*	Candidate
Southwestern willow flycatcher	*Epidonax tralii extimus*	Endangered
Yuma clapper rail	*Rallus longirostris yumanensis*	Endangered
Desert tortoise	*Gopherus agassizii* (Mojave Population)	Threatened
Desert tortoise	*Gopherus agassizii* (Mojave Population)	Critical Habitat

Source – USFWS 2007a

Greater Sage-grouse

The greater sage-grouse (*Centrocercus urophasianus*) once inhabited sagebrush habitats throughout the West; they currently occupy about 56 percent of their former range (Connelly et al. 2004). Besides recently being listed as a Candidate species, currently, in Nevada, the greater sage-grouse is a BLM Sensitive species and a State of Nevada Protected game bird

managed in accordance with the *Greater Sage-Grouse Conservation Plan for Nevada and Eastern California* (NDOW 2004). Between July 2002 and December 2003, the USFWS received several petitions requesting that the greater sage-grouse be listed as threatened or endangered rangewide. On April 21, 2004, the USFWS announced a 90-day petition finding in the Federal Register (69 FR 21484) that these petitions taken collectively, as well as information in their files, presented substantial information indicating that the petitioned actions may be warranted. On January 12, 2005, the USFWS announced that the 12-month finding (70 FR 2244), after reviewing the best available scientific and commercial information, found that listing the greater sage-grouse was not warranted. Western Watersheds Project filed a complaint on July 14, 2006, alleging that this finding was arbitrary and capricious under the Administrative Procedure Act (5 U.S.C. 701 *et seq.*). On December 4, 2007, the U.S. District Court, District of Idaho, ruled that the 12-month petition finding was in error and remanded the case to the USFWS for further consideration. Legal action is still pending and the Court has not yet set a date for completion of the remand.

In February 2008 (73 FR 10218), the USFWS determined that it is appropriate to initiate a new status review to address information that has become available since the 2005 petition finding. That finding relied, in part, on information in the "Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats" published in 2004 by the Western Association of Fish and Wildlife Agencies. Since the publication in 2004 of the Conservation Assessment, a significant amount of new research has been completed and new information has become available regarding threats, conservation measures, and population and habitat status of the greater sage-grouse. Unless the court requires an earlier completion date for a remanded 12-month finding, it is the intention of the USFWS to complete this new status review and make a new determination at that time as to whether listing is warranted. At this time, the USFWS is soliciting new information on the status of and potential threats to the greater sage-grouse. Information submitted prior to January 12, 2005, will be considered and need not be resubmitted. The USFWS will base a new determination as to whether listing is warranted on a review of the best scientific and commercial information available, including all such information received as a result of a notice published in the Federal Register on February 26, 2008. (73 FR 10218). In April 2008 (73 FR 23172), USFWS extended the period for submitting pertinent information on the species to June 27, 2008. On March 5, 2010, the greater sage-grouse became an ESA candidate species and on the same day the BLM released IM-2010-071 to supplement the existing conservation strategy. IM-2010-071 instructs the BLM to "to work with the state fish and wildlife agencies, using a consistent protocol, to delineate and map areas of high priority habitat across the ranges of Gunnison sage-grouse and greater sage-grouse." It also instructs BLM to "Re-route proposed transmission projects to avoid priority habitat."

Sage-grouse are closely associated with sagebrush habitats, specifically big sagebrush (*Artemisia tridentata*) and silver sagebrush (*A. cana*) for food and cover. Sage-grouse breeding habitats are defined as those where lek attendance, nesting, and early brood-rearing occur. Breeding occurs on leks, or relatively open areas with less herbaceous shrub cover than surrounding areas. Leks are typically surrounded by potential nesting habitat and are adjacent to relatively dense sagebrush stands used for escape, thermal, and feeding cover. Sage-grouse females nest in many different sagebrush-dominated cover types and most nests are located under sagebrush plants. An understory of native grasses and forbs provides productive nesting habitat. Early brood-rearing habitat is defined as sagebrush habitat within the vicinity of the nest used by hens with chicks up to 3 weeks following hatch. The availability of forb-rich habitats in close proximity to protective cover appears to be an important consideration for early brood-rearing. Late brood-rearing habitats are those used by sage-grouse starting later in the summer,

following desiccation of herbaceous vegetation in sagebrush uplands. Sage-grouse usually select late-summer habitats based on the availability of forbs; these areas are often wet meadows or irrigated pastures adjacent to sagebrush. Winter habitats of greater sage-grouse are dominated by sagebrush that can provide shelter and food. Habitat selection during winter is influenced by snow depth and hardness, topography, and vegetation height and cover. Sagebrush plants must be exposed above the snow to provide forage (modified from Connelly et al. 2004).

Numerous greater sage-grouse studies and surveys by NDOW, the BLM, and other entities have been conducted and are ongoing within and adjacent to the project area. Due to the current wealth of information that exists concerning greater sage-grouse habitat, aerial surveys to identify new lek areas were not conducted. Instead, NDOW and BLM biologists were consulted and suggestions were made that identified areas where focused greater sage-grouse surveys (specifically for this project) were needed. Once suitable greater sage-grouse habitat was identified in these areas, JBR conducted ground-based pre-sunrise/early morning surveys during the greater sage-grouse mating season, April 2007. Although suitable habitat was identified and surveyed, no active leks were discovered in addition to what had been previously known and identified. The RSS-Site B Sub-Alternative area was surveyed in April 2010 for general biological resources; no sign (i.e. pellets) of greater sage-grouse using the area was observed.

As shown on **Figure 3.8-1**, suitable greater sage-grouse habitat (identified as nesting, summer, and/or winter ranges) exists within the project area. In addition, **Table 3.8-2** displays the greater sage-grouse leks that occur within or near the project area. **Figure 3.8-1** displays the locations of these leks.

TABLE 3.8-2 GREATER SAGE-GROUSE LEKS IN OR NEAR THE ON LINE PROJECT AREA

LEK NAME	ACTIVE/ NOT ACTIVE/ HISTORIC	APPROXIMATE DISTANCE FROM CLOSEST FEATURE'S - OUTER PROJECT AREA BOUNDARY
Blackjack W	Unknown	1.8 miles from Segment 6C (Action Alternative)
Gardner Ranch N	Unknown	1.8 miles from Segment 6C (Action Alternative)
Ellison Creek N	Active	0.5 miles from Segment 6C (Proposed Action)
Ellison Creek N N	Inactive	Within Segment 6C (Action Alternative)
Runway	Unknown	0.3 miles from Segment 6C (Action Alternative)
Ellison Creek	Inactive	1.0 miles from Segment 6C (Action Alternative)
Ellison Knobs	Unknown	1.7 miles from Segment 6C (Action Alternative)
White River	Active	0.2 miles from Segment 6C (Action Alternative)

Source – NDOW
Active: Occupied in 2006
Inactive: No birds or sign for two years

Western Yellow-billed Cuckoo

The western yellow-billed cuckoo (*Coccyzus americanus)* has been identified as a Candidate species for listing as Threatened or Endangered in its range west of the Rocky Mountains (66 FR 38611). The State of Nevada has ranked the western yellow-billed cuckoo as an S1 protected species.

Yellow-billed cuckoos breed in large blocks of riparian habitats (particularly woodlands with cottonwoods and willows). They are low/shrub nesting birds that primarily feed on large insects such as caterpillars and grasshoppers, but have also been known to eat small frogs and

arboreal lizards. Nesting peaks (mid-June through August) may be influenced by an abundance of caterpillars and other prey.

Historically, the yellow-billed cuckoo was widespread and common in California and Arizona, locally common in a few river reaches in New Mexico, common very locally in Oregon and Washington, and generally scattered in drainages of the arid and semiarid portions of western Colorado, western Wyoming, Idaho, Nevada, and Utah (USFWS 2002).

This species has been known to occur in Lincoln and Nye counties. However, no suitable yellow-billed cuckoo habitat is known or was observed within the project area during baseline surveys conducted in 2006 and 2007, thus this species will not be discussed further in this FEIS.

Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Epidonax tralii extimus*) was listed as Endangered on February 27, 1995, with Critical Habitat designated in 2005. The critical habitat that the USFWS designated is an 18.6-mile-long stretch along the Virgin River from the Arizona border to the Overton Wildlife Management Area in Nevada.

The breeding range of the southwestern willow flycatcher includes southern California, Arizona, New Mexico, extreme southern portions of Nevada and Utah, far western Texas, perhaps southwestern Colorado, and extreme northwestern Mexico. In Nevada, this subspecies can be found along the Virgin River, lower Muddy River, Colorado River, and Pahranagat Valley. The southwestern willow flycatcher breeds in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands including lakes and reservoirs.

This species has declined because of removing, thinning, or destroying riparian vegetation; water diversions and groundwater pumping which alter riparian vegetation; overstocking or other mismanagement of livestock; and recreational development. In addition to the above threats, the southwestern willow flycatcher is also subject to cowbird parasitism (USFWS 2007b).

The southwestern willow flycatcher has been known to occur in Lincoln, Nye, and Clark counties. Segment 9D of the Proposed Action passes less than 1,000 feet within the extreme southeastern portion of the Pahranagat National Wildlife Refuge (NWR). The Pahranagat NWR is not designated as critical habitat for the southwestern willow flycatcher. No suitable southwestern willow flycatcher habitat is known to exist or was observed within the project area during baseline surveys conducted in 2006 and 2007, thus this species will not be discussed further in this FEIS.

Yuma Clapper Rail

The Yuma clapper rail (*Rallus longirostris yumanensis*) was listed as federally Endangered in 1967, although no critical habitat has been designated for this species. The Yuma clapper rail is a marsh bird found in dense cattail or cattail-bulrush marshes along the lower Colorado River in Mexico north to the lower Muddy River and Virgin River in Utah above those rivers' confluence with Lake Mead. In Nevada, this subspecies can be found along the Virgin River and lower Muddy River, along the Colorado River around Lake Mohave, and in the Las Vegas Wash.

Threats include habitat destruction, primarily due to stream channelization and drying and flooding of marshes, resulting from water flow management on the lower Colorado River. Most U.S. habitat is in national wildlife refuges and state wildlife management areas that are subject to water management practices of the U.S. Bureau of Reclamation. Additional threats include contaminants from agricultural tailwaters and exotic vegetation (USFWS 2007a).

No suitable Yuma clapper rail habitat is known or was observed within the project area during baseline surveys conducted in 2006 and 2007, thus this species will not be discussed further in this FEIS.

Desert Tortoise

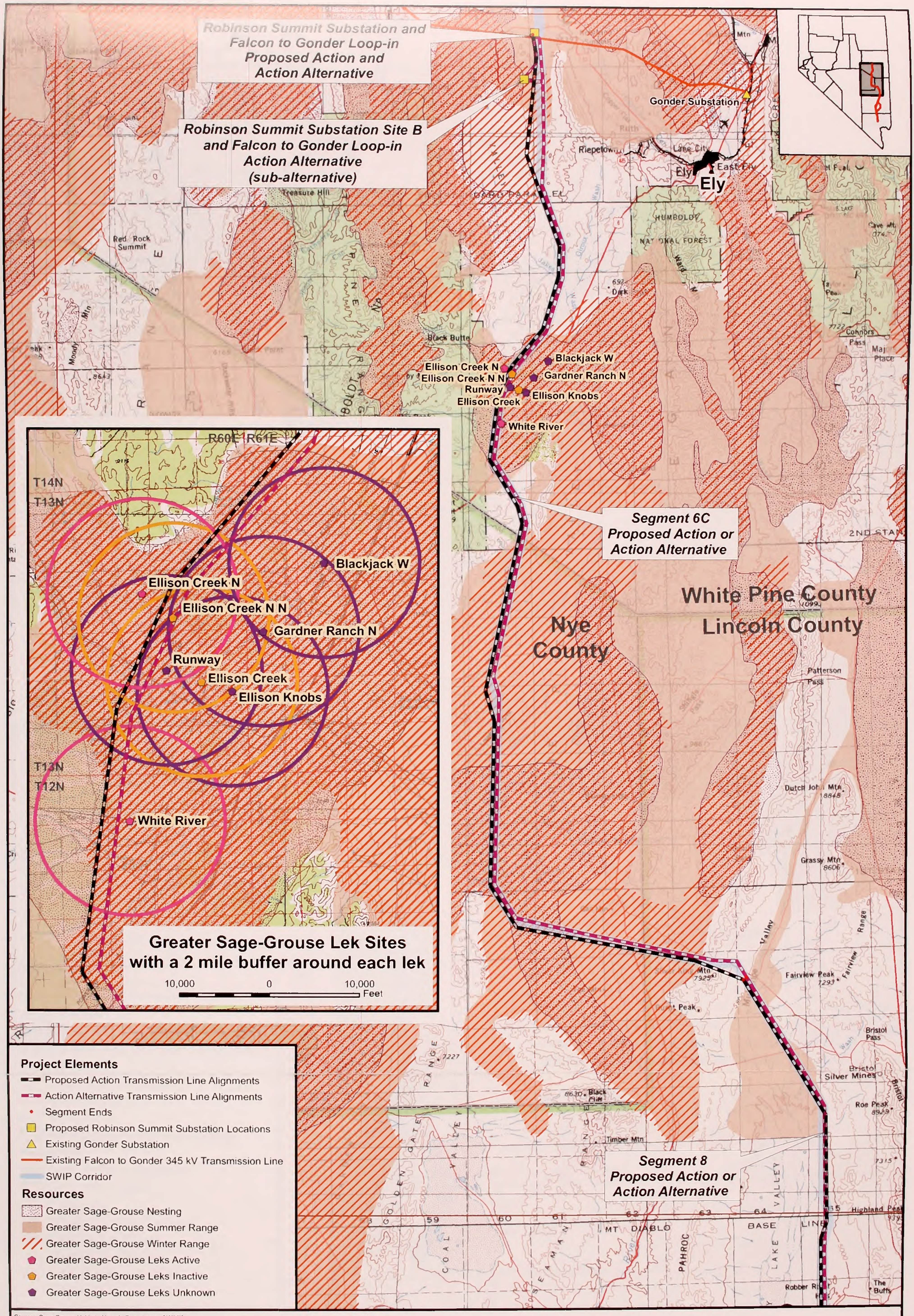
The desert tortoise (*Gopherus agassizii*) can occupy habitats that range from sandy flats to rocky foothills. They have a strong proclivity in the Mojave Desert for alluvial fans, washes, and canyons where more suitable soils for den construction might be found. They range from near sea level to around 7,300 feet, but the most favorable habitat occurs between approximately 1,000 to 3,500 feet in elevation. It is believed that, in their entire lives, these tortoises rarely move more than 2 miles from their natal nest. They also live to be 80-100 years old.

The Mormon Mesa desert tortoise critical habitat lies within the southern portion of the project area (Segments 9D, 10 (sub-alternative), and 11), along with portions of potentially suitable tortoise habitat bordering this critical habitat in all directions (**Figure 3.8-2**). A portion of Segment 11 also runs along the eastern border of the Desert National Wildlife Refuge. Desert tortoises are known to occur within these areas.

In May 2007, triangle protocol surveys (0.5-mile long triangle surveys every 3 miles) for the desert tortoise within the southern portion of the transmission line alignment (Segments 9A, 9C, 9D, 10 (sub-alternative), and 11) were conducted. **Figure 3.8-2** displays desert tortoise habitat and the location and type of desert tortoise sign observed during the surveys. Based on the data gathered, it appears that overall desert tortoise use for the northern most area surveyed is low (not surprising as this area is at the northern extent of the desert tortoise's range). Highest use occurred along the middle and southern half of the project area surveyed. Only one live tortoise was encountered. Twenty-three tortoise burrows were found. Eight carcasses in various stages of decay were discovered but none were determined to have been recent deaths. All carcasses were those of adult tortoises. Eggshell remains were observed in one burrow. Scat, not associated with a nearby burrow, was observed six times. In addition, a 500-foot survey area surrounding the existing Harry Allen Substation was conducted in fall 2006. This survey documented numerous desert tortoise sign, scat, burrows, and carcasses (JBR 2007b).

3.8.3.2 BLM Sensitive and State of Nevada Special Status Species

In addition to Federally Listed TEPC species in Nevada, sensitive species are defined as those plant and animal species identified by the BLM as species for which population viability is a concern, as evidenced by: (1) a significant current or predicted downward trend in population numbers or density; or (2) a significant current or predicted downward trend in habitat capability that would reduce the species' existing distribution (BLM 2001b). The state of Nevada and the BLM provide these species with the same level of protection as is provided for candidate species in BLM Manual 6840.06 C, that is to "ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed." The Sensitive Species designation is normally used for species that occur on BLM administered lands for which BLM has the capability to significantly affect the conservation status of the species through management. **Appendix 3D** lists the numerous Sensitive species that are known to occur within the two BLM district offices that the project area occurs within, the general habitat types the species are generally found in, and whether any of these species were observed during field baseline surveys. Sensitive fish species are discussed in **Section 3.8.3.5**. Background information on several of the "higher profile" Sensitive species that occur or have the potential to occur within the project area that are not discussed in other general wildlife sections are provided below.



Source - Sage Grouse Habitat: Nevada Department of Wildlife
Base Map: USGS topographic map of Nevada, (scanned from paper copy and georeferenced by R. Hess, University of Nevada, Reno)

1:500,000
10 0 10 Miles
10,000 0 10,000 Meters
Scale is 1:500,000 when printed at 11"x17"

N

FIGURE 3.8-1
GREATER SAGE-GROUSE RANGE AND LEK SITES ON LINE PROJECT

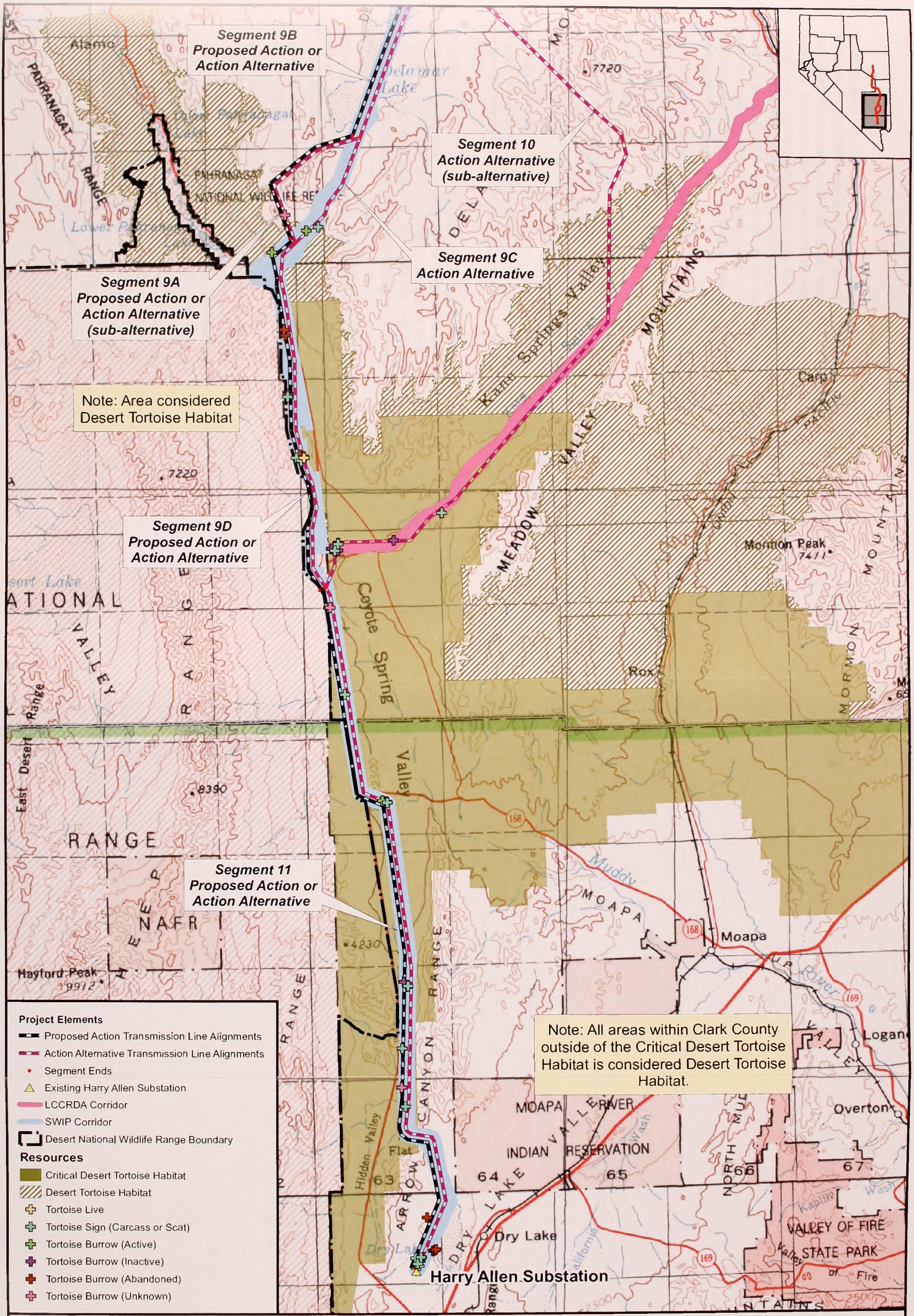


FIGURE 3.8-2
DESERT TORTOISE HABITAT AND OBSERVATIONS ON LINE PROJECT

Bald Eagle

Formerly a Federally Listed species up until its recent delisting, the bald eagle (*Haliaeetus leucocephalus*) is still protected under the Bald and Golden Eagle Protection Act. During the breeding season, bald eagles are closely associated with water and occur along coasts, lakeshores, or riverbanks, where they feed primarily on fish. Bald eagles typically nest in large trees, primarily cottonwoods (*Populus* sp.) and conifers, although they have also been known to nest on projections or ledges of cliff faces. During winter, bald eagles concentrate wherever food is available. Areas of open water, where fish and waterfowl can be taken, are common wintering sites. Wintering bald eagles have been observed on the Kirch and Pahranagat Wildlife Management Areas.

No bald eagle nest sites are known to occur in or within close proximity to the project area, and occurrence of this species would be limited to migrating and wintering individuals using the area for hunting and feeding opportunities.

Pygmy Rabbit

The pygmy rabbit (*Brachylagus idahoensis*) occurs throughout most of the Great Basin. However, the distribution and population trends of this species are largely unknown (BLM 2008a). Currently, in Nevada, the pygmy rabbit is a BLM Sensitive species and a State of Nevada Species of Special Concern. It was also a former Category 2 Candidate Species. A formal listing petition was received from environmental groups in April 2003 that required the USFWS to make a determination on whether there was substantial information to initiate a status review of the pygmy rabbit. The USFWS concluded that more research was needed to better determine the distribution and abundance of the species throughout its range (USFWS 2005).

On January 8, 2008 (73 FR 1312) the USFWS announced a 90-day finding on a petition to list the pygmy rabbit as threatened or endangered under the Endangered Species Act of 1973, as amended. The USFWS then initiated a status review to determine if listing the species was warranted. On September 30, 2010 (75 FR 189) the USFWS announced that listing the pygmy rabbit is not warranted at this time; however, the pygmy rabbit still remains a BLM Sensitive species.

During baseline vegetation and general wildlife surveys conducted between the fall of 2006 and summer of 2007, pygmy rabbits and suitable habitat were observed within transmission line Segment 6C (**Figure 3.8-3a**, and **Appendix 3D**). In addition, pygmy rabbit sign (i.e. burrows and pellets) was observed during surveys in the spring of 2010 near the RSS-Site B sub-alternative area, the 345kV loop-ins, and at the US-50/Jakes Valley Road intersection.

Raptors (including Golden Eagles)

The project area is home to many types of raptors including hawks, owls, golden eagles, accipiters, and falcons. Population information for many of the resident species in Nevada is not available, and where there is species-specific information, general trends in raptor populations are not consistent. Densities of some raptors, such as the short-eared owl (*Asio flammeus*), fluctuate based on prey availability, but are considered to be adequate for healthy populations. Populations of some species such as the Swainson's hawk (*Buteo swainsoni*) have been increasing in Nevada, although surveys indicate they have not reached historic densities. Surveys also indicate populations of other species such as the prairie falcon (*Falco mexicanus*) have continued to decline (Nevada Partners in Flight 2002). The planning area offers significant habitat (i.e., foraging and suitable nesting areas) for species dependent on sagebrush, salt desert scrub, and pinyon-juniper habitats. The highest densities of ferruginous hawks (*Buteo*

regalis) in Nevada occur within the planning area. Nevada represents a large portion of the basin and range province, which supports 28 percent of the world population of prairie falcons (Nevada Partners in Flight 2002). Prairie falcons nest in cliffs and rock outcrops; other raptors within the planning area may use rock outcrops, trees, or burrows as nesting sites. Golden eagles nest on cliffs, in the upper one-third of deciduous and coniferous trees, or on artificial structures (windmills, electricity transmission towers, artificial nesting platforms, etc.) and most golden eagle territories have up to six nests (Pagel et al. 2010). The golden eagle is protected under the Bald and Golden Eagle Protection Act. Additional technical and management guidance for golden eagles that provides direction for avoiding and minimizing disturbance and other kinds of take was issued by the USFWS in February 2010 (Pagel et al. 2010).

The habitat types in the project area provide numerous nesting, perching, and foraging opportunities for a variety of raptor species from early spring (February/March) to late summer (August). Surveys for raptor nests in high potential habitats occurring within portions of the project area were conducted for this project. Twelve species of raptors were observed during baseline surveys. These species include: sharp-shinned hawk (*Accipiter striatus*), red-tailed hawk (*Buteo jamaicensis*), cooper's hawk (*Accipiter cooperii*), American kestrel (*Falco sparverius*), peregrine falcon (*Falco peregrinus*), ferruginous hawk, Swainson's hawk, great horned owl (*Bubo virginianus*), Long-eared owl (*Asio otus*), Northern harrier (*Circus cyaneus*), golden eagle (*Aquila chrysaetos*), and turkey vulture (*Cathartes aura*). **Figures 3.8-3a** and **3.8-3b** shows raptor nest locations identified by JBR (within 0.5 miles), and known "raptor nesting areas," or areas of suitable habitat that certain species return to every nesting season, provided by NDOW (within 2 miles of the project area).

Western Burrowing Owl

The western burrowing owl *(Athene cunicularia hypugaea)* is a grassland specialist distributed throughout western North America. The western burrowing owl is protected by the Migratory Bird Treaty Act and is protected under Nevada Revised Statues 501 and the Nevada Administrative Code 503. The Nevada Natural Heritage Program ranks the species as an S3B, meaning that it has rare and uncommon breeding populations in the state (BLM 2008a). Burrowing owls were discovered within the project area and suitable habitat for this species occurs throughout various portions of the project area (**Figure 3.8-3b**).

Bats

Bat breeding and roosting habitat occurs within or adjacent to many portions of the project area, generally in the higher elevation areas where there are areas of cliffs, rock outcroppings, and pinyon-juniper vegetation communities. Foraging habitat for bats within or adjacent to the project area are most likely associated with the wetland/riparian areas.

Various rock outcroppings, cliff areas, and pinyon-juniper habitats were observed within the project area for the transmission line alignments that provide suitable habitats for bats. No specific bat surveys were conducted.

The majority of the 23 bat species in Nevada could occur throughout the project area; 15 of these species currently are identified as BLM Sensitive species. Of these, the spotted bat (*Euderma maculatum*) is the only state-protected bat species known to occur within the planning area. This species is ranked as S2/S1 within the planning area, indicating continued presence in the state is imperiled. The spotted bat is designated as BLM and U.S. Forest Service sensitive, and is protected by Nevada State Law (BLM 2008a).

Banded Gila Monster

The banded Gila monster (*Heloderma suspectum cinctum*) is a BLM Sensitive species and is currently ranked as a State of Nevada S2 species. Gila monsters range from the eastern Mojave to the northern Sonora desert. County status of this species is unknown due to the elusive nature of this reptile that is believed to spend approximately 95 percent of its life underground. Species distribution is inferred from habitat preferences and has been collected historically in both Clark and Lincoln counties. It frequents Mojave desert scrub, mesquite/catclaw, blackbrush, pinyon-juniper, and desert riparian habitats. Gila monsters are typically found on the lower slopes of rocky canyons, mesic areas, and flats with grassland or succulents. It uses rocks and burrows of other animals for cover and it searches for prey items, such as eggs of ground-nesting birds, reptiles, lizards, and insects, primarily at night, although it may be active during the day. Gila monsters may also focus feeding efforts on locating desert tortoise eggs (Clark County MSHCP and EIS 2000).

Potential banded Gila monster habitat exists within the vicinity of the southernmost portions of the transmission line alignments in Lincoln and Clark counties. Its geographic range approximates that of the desert tortoise and is coincident to the Colorado River drainage (**Figure 3.8-1**). No incidental occurrences of this species were observed within the project area during desert tortoise triangle surveys conducted in 2007 (see **Section 3.8.3.1**).

Kangaroo Mouse

The NDOW has indicated both the dark and pale kangaroo mouse may occur in project area.

<u>*Pale Kangaroo Mouse (Microdipodops pallidus)*</u>

The pale kangaroo mouse is a state protected species, considered vulnerable due to its rarity and restricted range (NNHP 2009). Pale kangaroo mice are restricted to valley bottoms containing stabilized dunes with fine, wind-blown sand (Wilson and Ruff 1999). O'Farrell and Blaustein (1974) state that pale kangaroo mice have also been reported in gravelly soil, where they were sympatric with dark kangaroo mice (*M. megacephalus*). Wilson and Ruff (1999) note the species always occurs below the zone dominated by big sagebrush. Preferred habitat is instead characterized by saltbush and greasewood.

Burrows are constructed in or near wind-blown sand, often near shrubs. Burrows are relatively simple and lacking chambers (O'Farrell and Blaustein 1974). The species is nocturnal and generally solitary, but is reported to be less aggressive toward congeners than other heteromyid rodents. Diet is grains (seeds) supplemented by insects. Water requirements are met by diet and morphological and behavioral adaptations. The species can live without free water. Activity is reported to be highest shortly after sunset. Winter activity has been reported (O'Farrell and Blaustein 1974), but Wilson and Ruff (1999) state the species is a hibernator.

The range of the pale kangaroo mouse is described as Upper Sonoran sagebrush desert in central Nevada and a small portion of eastern California (O'Farrell and Blaustein 1974).

<u>*Dark Kangaroo Mouse (Microdipodops megacephalus), including Desert Valley Kangaroo Mouse (M. megacephalus albiventer)*</u>

The dark kangaroo mouse is a BLM and state protected species considered imperiled due to its rarity. The Desert Valley subspecies is endemic to Nevada (NNHP 2009). Dark kangaroo mice usually occur on stabilized dunes and in fine gravelly soils (O'Farrell and Blaustein 1974; Wilson and Ruff 1999). Hall and Linsdale (1929), writing before the two species (dark and pale) of kangaroo mouse were differentiated, note a preference for sandy soils. Another work (Ghiselin 1970) suggests dark kangaroo mice show a preference for gravelly soils. Wilson and Ruff

(1999) state that valley bottoms and alluvial fans dominated by sagebrush, rabbitbrush, and horsebrush represent the preferred habitat of dark kangaroo mice. Additionally, a recent small mammal study found that 85 percent of the dark kangaroo mice captured were found on sand substrate (Ambos et al. 2007, p.33).

Dark kangaroo mice construct burrows that may include a nest chamber and seed storage chambers (O'Farrell and Blaustein 1974). Diet is grains (seeds) supplemented by insects, particularly in summer. Water requirements are met largely by diet and morphological and behavioral adaptations. Activity is reported to be highest shortly after sunset. Winter activity has been not reported (O'Farrell and Blaustein 1974). Wilson and Ruff (1999) state the species hibernates, emerging from hibernation in March and entering hibernation by November.

The dark kangaroo mouse is more widely distributed than the pale kangaroo mouse, occurring in Upper Sonoran sagebrush habitat in much of Nevada, as well as southeastern Oregon and small portions of eastern California (O'Farrell and Blaustein 1974) and Utah (Wilson and Ruff 1999).

Figures 3.8-3c and **3.8-3d** show potential dark kangaroo mouse habitat in relation to the project area based upon models developed by the Southwest Regional Gap Analysis Project. The models are based on the concept of Wildlife Habitat Relationships that consider the resources and conditions that must be present in areas where species live and reproduce. The model is based on known site distributions and a variety of resource and landscape variables known to influence site density such as land cover, elevation, slope, aspect, distance to perennial water, landform, soils, hydrologic units, mountain ranges, precipitation, and temperature (JBR 2010a).

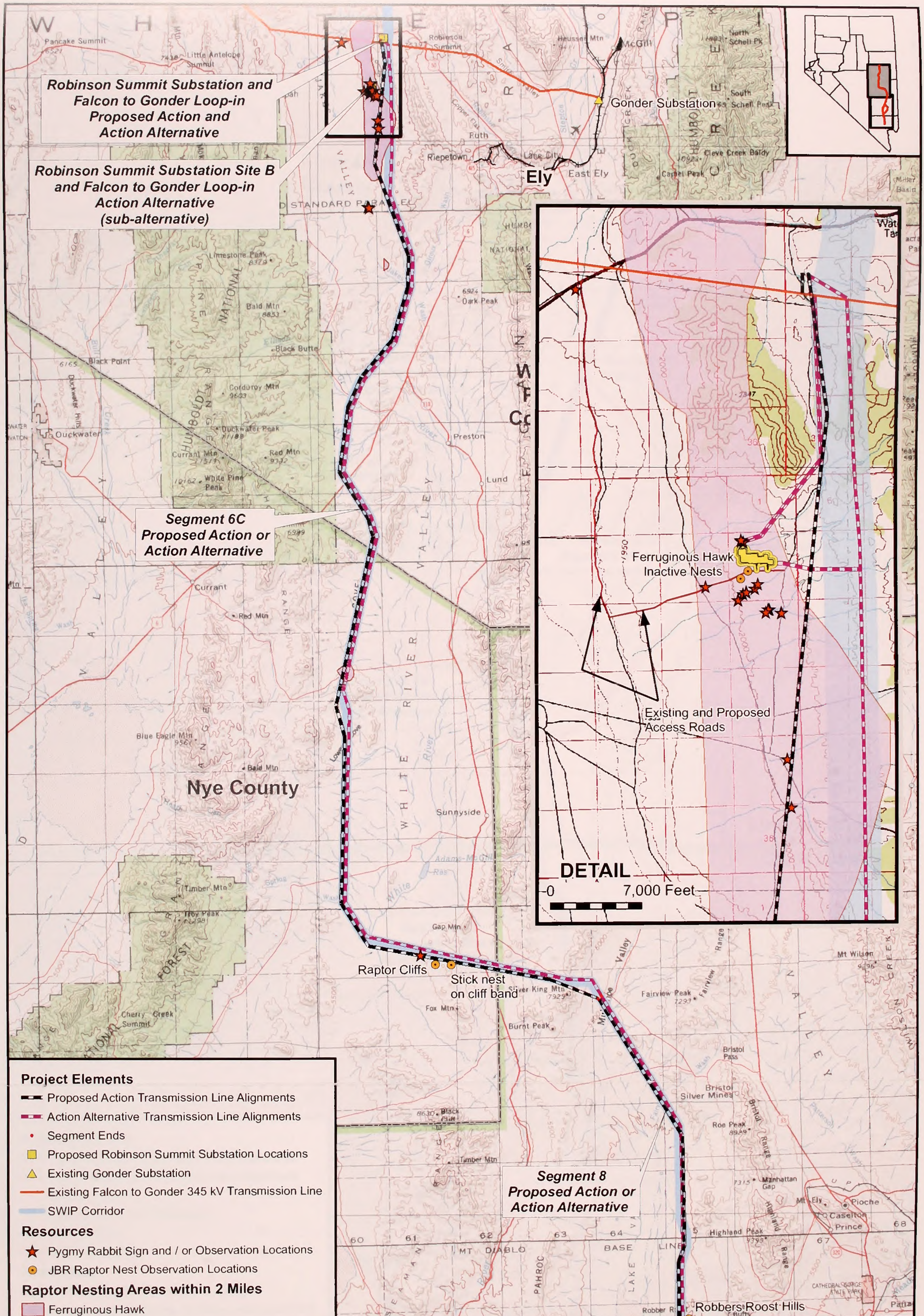
Montane Vole

The montane vole (*Microtus montanus*) occupies wet meadows, cropland (especially fields and pastures of grass and legumes), and grassy areas by streams and lakes. The montane vole utilizes shallow burrows and surface runways. Its diet includes grasses and sedges, as well as leaves, stems, and roots of a wide variety of forbs. Within Nevada, there are two subspecies of montane vole on the At-Risk Tracking List (NNHP 2009): the Pahranagat Valley montane vole (*Microtus montanus fucosus)* and the Ash Meadows montane vole (*Microtus motanus nevadensis*). The Pahranagat Valley subspecies is found in desert riparian areas; the habitat type is listed as riparian-wetland within the Mojave Desert vegetation zone (BLM 2008a), such as the springs in the Pahranagat Valley of southern Nevada (Linzey and Hammerson 2008). Predators include hawks, owls, foxes, badgers, and coyotes.

The Pahranagat Valley subspecies is listed as a BLM Sensitive species and State of Nevada Special Status species (NNHP 2009), considered imperiled due to rarity or other demonstrable factors. The Ash Springs subspecies is considered historical with potential to be rediscovered (NNHP 2009). Both of these montane vole subspecies are endemic to Nevada.

Desert Bighorn Sheep

Desert bighorn sheep (*Ovis canadensis nelsoni*) is a BLM Sensitive species (BLM 2008a). This species is discussed under Big Game in **Section 3.8.3.3**.



Source - Observed Invertebrate Animals: Nevada National Heritage Program
Raptor Nesting Areas: Nevada Department of Wildlife
Burrowing Owl, Raptor and Pymgy Rabbit observations: JBR 2007
Base Map: USGS topographic map of Nevada, (scanned from paper copy and georeferenced by R. Hess, University of Nevada Reno)

1:500,000

10 0 10 Miles

10,000 0 10,000 Meters

Scale is 1:500,000 when printed at 11"x17"

N

FIGURE 3.8-3a
BLM SENSITIVE AND STATE OF NEVADA SPECIAL STATUS SPECIES ON LINE PROJECT

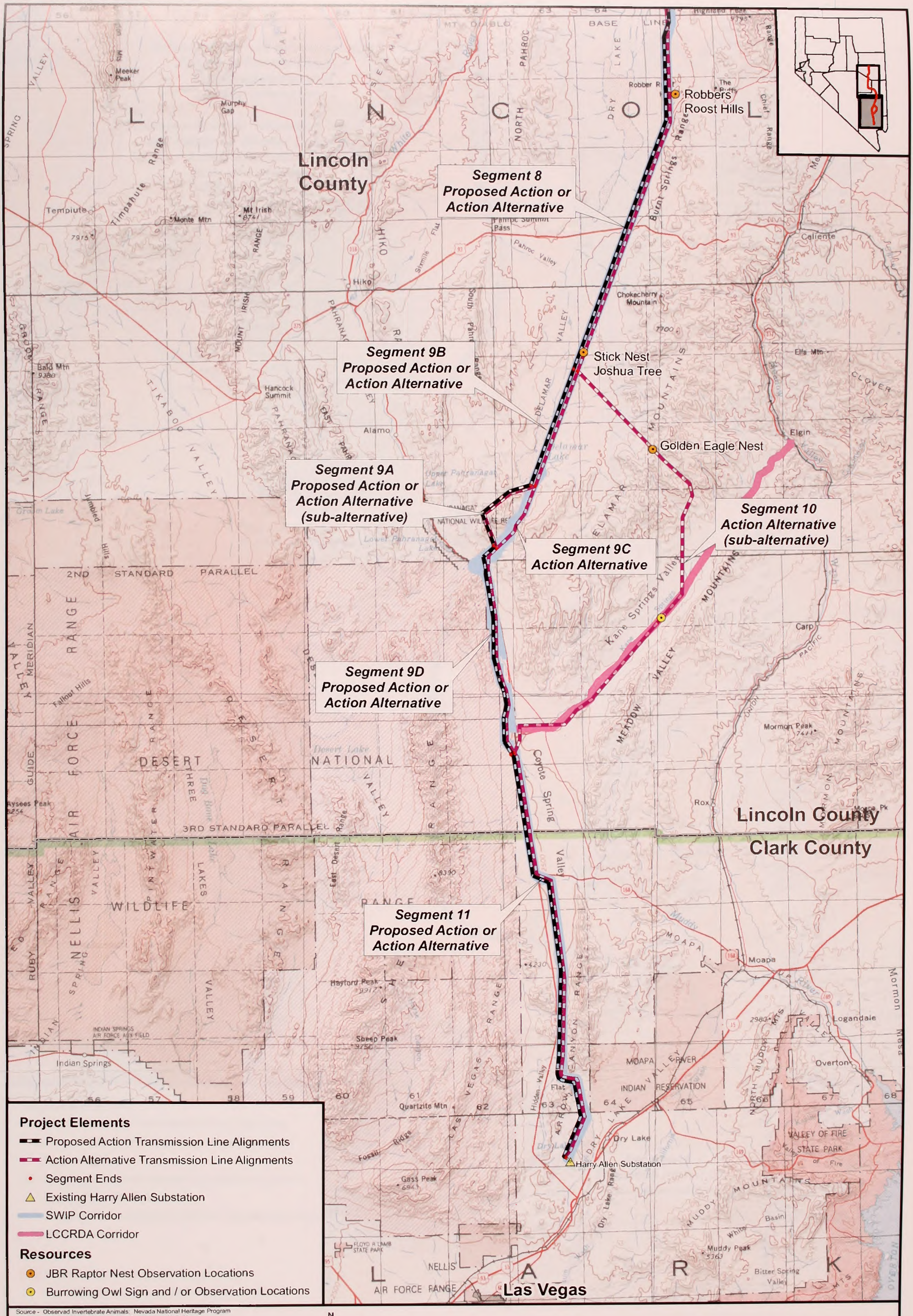


FIGURE 3.8-3b
BLM SENSITIVE AND STATE OF NEVADA
SPECIAL STATUS SPECIES
ON LINE PROJECT

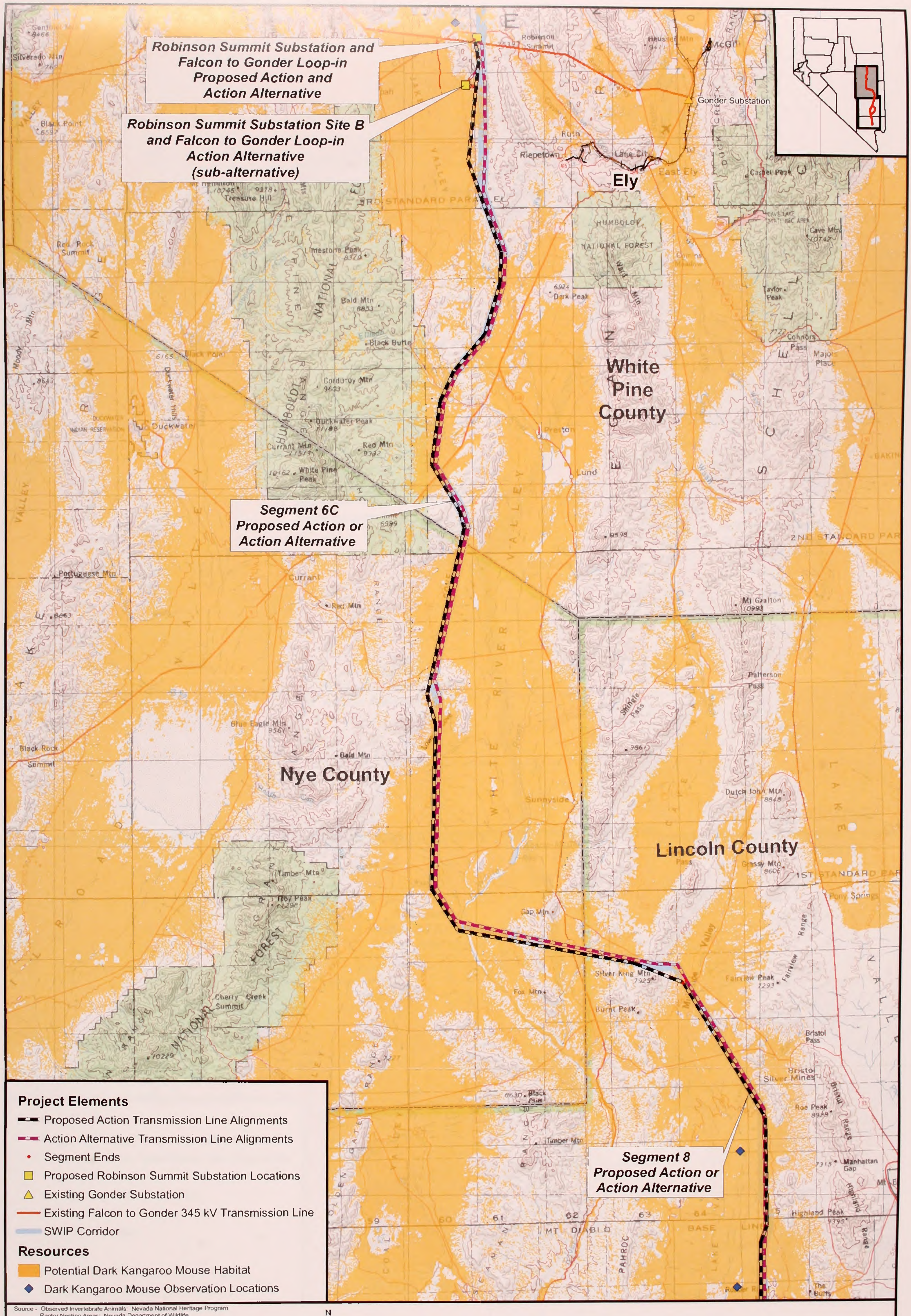


FIGURE 3.8-3c
POTENTIAL DARK KANGAROO MOUSE HABITAT
SPECIAL STATUS SPECIES
ON LINE PROJECT

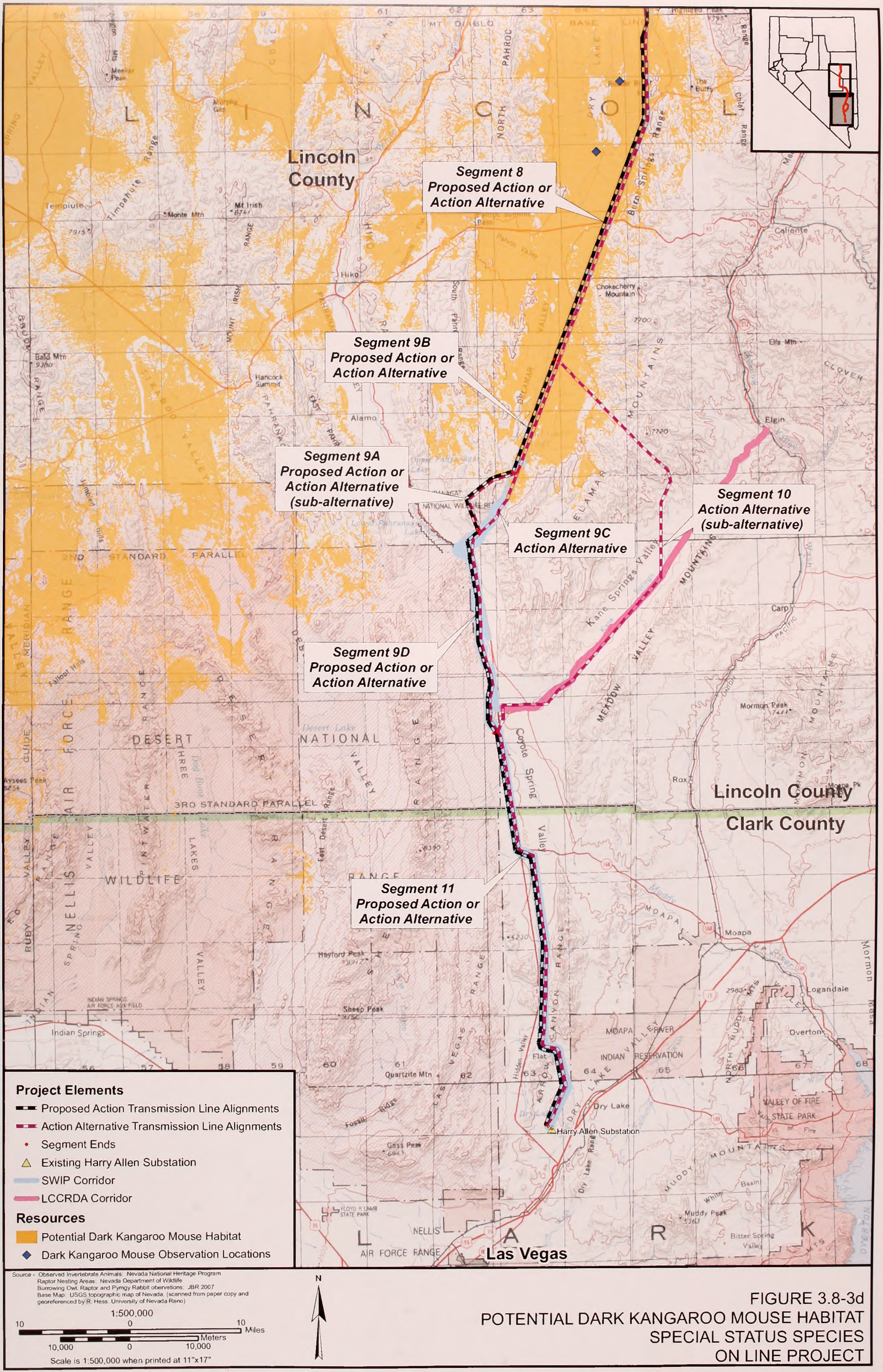


FIGURE 3.8-3d
POTENTIAL DARK KANGAROO MOUSE HABITAT
SPECIAL STATUS SPECIES
ON LINE PROJECT

3.8.3.3 General Wildlife

Big Game

Big game species within the project area consist primarily of pronghorn antelope, mule deer, Rocky Mountain elk, and two subspecies of bighorn sheep (**Figures 3.8-4a - 3.8-4d**). Big game species utilize a variety of habitats, depending on the season. Mule deer and pronghorn antelope move between seasonal ranges more than other big game species, and are generally found at higher elevations in summer (i.e., "summer range") and lower elevations in winter (i.e., "winter range"). Seasonal movements for these species are affected by weather conditions, specifically the snow line, which determines the availability of food. Some low-elevation habitats are suitable for mule deer and pronghorn all year ("year-round range"). Elk are better adapted to snow conditions and many herds stay in the same habitat all year, although high-quality summer ranges such as aspen habitats that contain grasses and forbs are important to the species in general. Bighorn sheep also do not migrate in the winter, as they are adapted to cold, high-elevation conditions. Some habitat in the project area has been designated as suitable for this species ("potential habitat") and some areas contain known populations ("occupied habitat"). "Crucial" ranges for big game are habitats containing resources that are necessary to prevent unacceptable population declines. For example, crucial winter range for mule deer contains sufficient cover, food, and water to sustain individuals during this vulnerable period, which if not present, may result in high rates of mortality and possibly unacceptable population declines.

Pronghorn Antelope: With the exception of some higher elevation areas, pronghorn antelope (*Antilocapra americana)* year-round range exists within all of the project features that are north of Segments 9C and 9A (**Figure 3.8-4a**). There is no crucial winter range associated with this species in or near the project area. For details regarding which transmission line segments pass through pronghorn antelope year-round range see **Section 3.8.4.2**.

Mule Deer: Mule deer (*Odocoileus hemionus*) range is also mainly adjacent to portions of the project area. Within the project area, mule deer range is generally associated with the middle to upper elevations (**Figure 3.8-4b**). Habitat for mule deer includes big sagebrush, low sagebrush, shadscale, grasslands, and agricultural fields. Mountain mahogany and pinyon-juniper woodlands are important for thermal and escape cover during winter. Riparian areas and sagebrush communities are commonly occupied by mule deer during the summer. For details regarding which transmission line segments pass through crucial mule deer year-round range see **Section 3.8.4.2**. No major migration corridors have been identified in the project area.

Rocky Mountain Elk: Several portions of the project area are located within Rocky Mountain elk (*Cervus canadensis nelsoni*) year-round range (**Figure 3.8-4c**). The largest herds occur in the Egan and Schell Creek Ranges. Since the late 1990s, elk populations in Lincoln and White Pine counties have been managed under the guidance of the Lincoln and White Pine Elk Management Sub-plans to the Statewide Elk Species Management Plan. These management sub-plans established population objectives by management unit (BLM 2008a). Elk sign was frequently encountered in the mid to upper elevations crossed by portions of the transmission line and elk were observed at the RSS-Site B sub-alternative location. For details regarding which transmission line segments pass through Rocky Mountain elk year-round range see **Section 3.8.4.2**.

Desert Bighorn Sheep: As noted in **Section 3.8.3.2**, desert bighorn sheep *(Ovis canadensis nelsoni)* are a Nevada BLM Sensitive species (**Appendix 3D**). **Figure 3.8-4d** identifies both occupied and potential desert bighorn sheep range occurs within and adjacent to portions of

the project area. In 1936, 1.5 million contiguous acres were established in Clark and Lincoln counties as the Desert National Wildlife Range to primarily benefit desert bighorn conservation. From the late-1980s to present, NDOW has been reintroducing desert bighorn sheep into a number of mountain ranges within the project area (BLM 2008a). For details regarding which transmission line segments pass through occupied desert bighorn sheep range see **Section 3.8.4.2**.

Rocky Mountain Bighorn Sheep: As displayed on **Figure 3.8-4d,** potential Rocky Mountain bighorn sheep *(Ovis canadensis canadensis)* range is not located within or near the project area. Twelve Rocky Mountain bighorn sheep were reintroduced to Mount Grafton in the late 1980s. To date, limited populations of Rocky Mountain bighorn sheep occur on Mount Moriah and Mt. Wheeler in White Pine County, and on Mount Grafton in Lincoln County (BLM 2008a). For details regarding which transmission line segments pass through occupied Rocky Mountain bighorn sheep range see **Section 3.8.4.2**.

Small Mammals

Black-tailed jackrabbits (*Lepus californicus*) were the most common small mammal observed within the project area during baseline surveys. Mountain cottontails (*Sylvilagus nuttallii*) and pygmy rabbits were also commonly observed. Pygmy rabbits are discussed in **Section 3.8.3.2**. Packrat *(Neotoma cinerea)*, rock squirrel (*Spermophilus variegates*), least chipmunk (*Tamias minimus*), Richardson's ground squirrel *(Spermophilus elegans nevadensis)*, white-tailed antelope squirrel *(Ammospermophilus leucurus)*, golden-mantled ground squirrel *(Spermophilus lateralis)*, Piute (Great Basin) ground squirrel *(Spermophilus mollis)*, Townsend's ground squirrel *(Spermophilus townsendii)*, and pygmy shrews *(Sorex minutus)* are other small mammals that were either observed during baseline surveys (**Appendix 3D**) or are known to occur within the project area.

Predatory Mammals

The project area provides a diversity of habitat types for a variety of predators. Predators that were either observed directly or their presence inferred by sign (i.e., tracks, dens, scat) during baseline surveys include: coyote (*Canis latrans),* kit fox (*Vulpes macrotis*), badger (*Taxidea taxus*), and mountain lion *(Felis concolor)*. Other predators that likely occur within or near the project area include gray fox (*Urocyon cinereoargenteus*) and bobcat *(Lynx rufus)*.

Reptiles

Several species of reptiles were observed within the project area (**Appendix 3D**). Side-blotched lizards (*Uta stansburiana*), western fence lizards (*Sceloporus occidentalis*), and_sagebrush lizards (Sceloporus graciosus) were the most abundant species of reptile encountered. Desert horned lizards (*Phrynosoma platyrhinos*) were observed in southern Lincoln and Clark counties. One Mojave Desert Sidewinder (*Crotalus cerastes cerastes*) was observed near the south end of Kane Springs Valley. One live desert tortoise and multiple tortoise sign were also observed as discussed in **Section 3.8.3.1**.

Upland Game Birds

The following species of game birds were observed in the project area during baseline surveys: chukar (*Alectoris chukar*), mourning dove (*Zenaida macroura*), California quail (*Callipepla californica*), and greater sage-grouse (discussed in **Section 3.8.3.1**). In addition, blue grouse (*Dendragapus obscurus*), Hungarian partridge (*Perdix perdix*), Gambel's quail (*Callipepla gambelii*), and Rio Grande turkey (*Meleagris gallapavo intermedia*) can also occur within or near the project area.

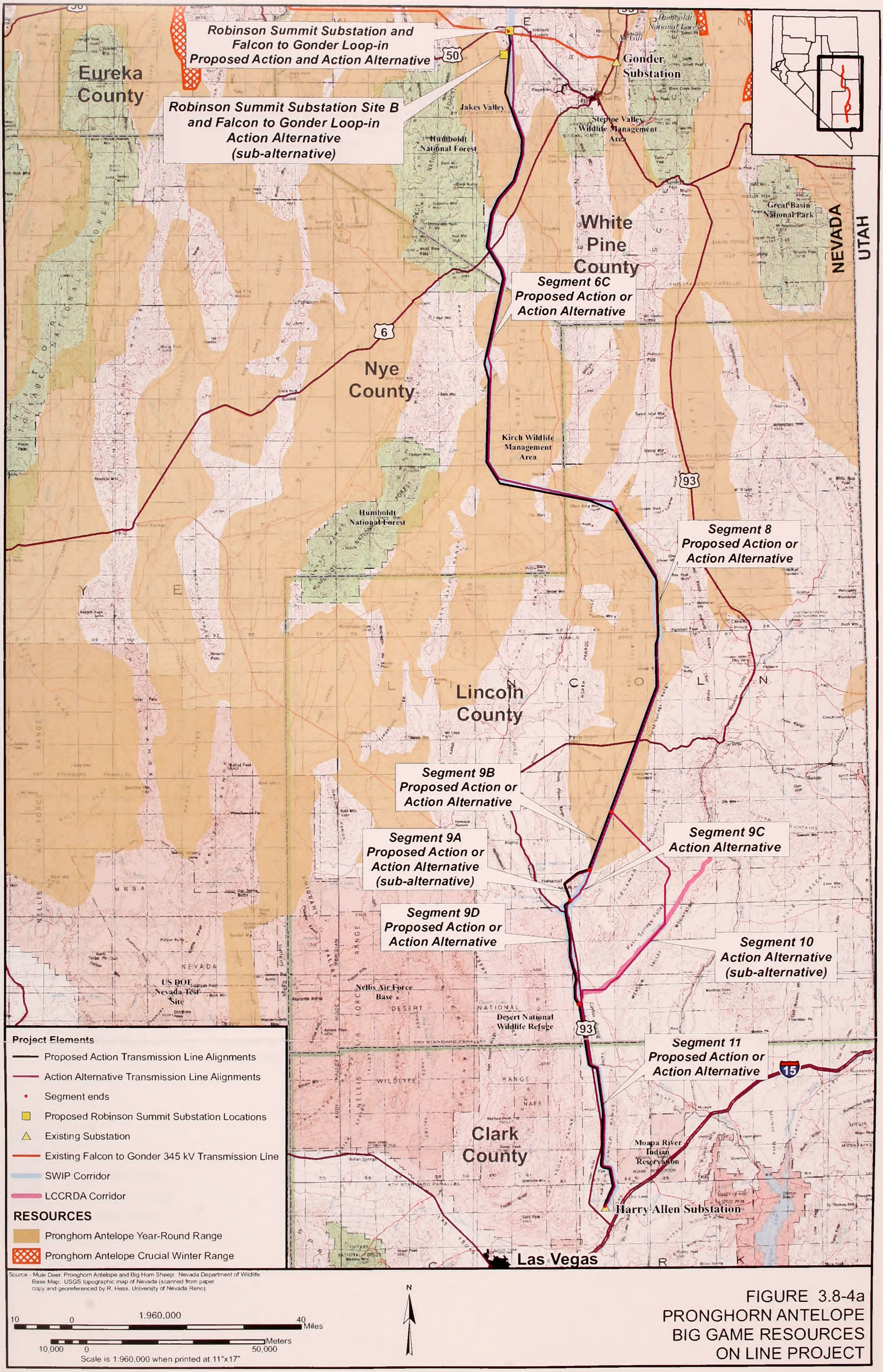


FIGURE 3.8-4a
PRONGHORN ANTELOPE
BIG GAME RESOURCES
ON LINE PROJECT

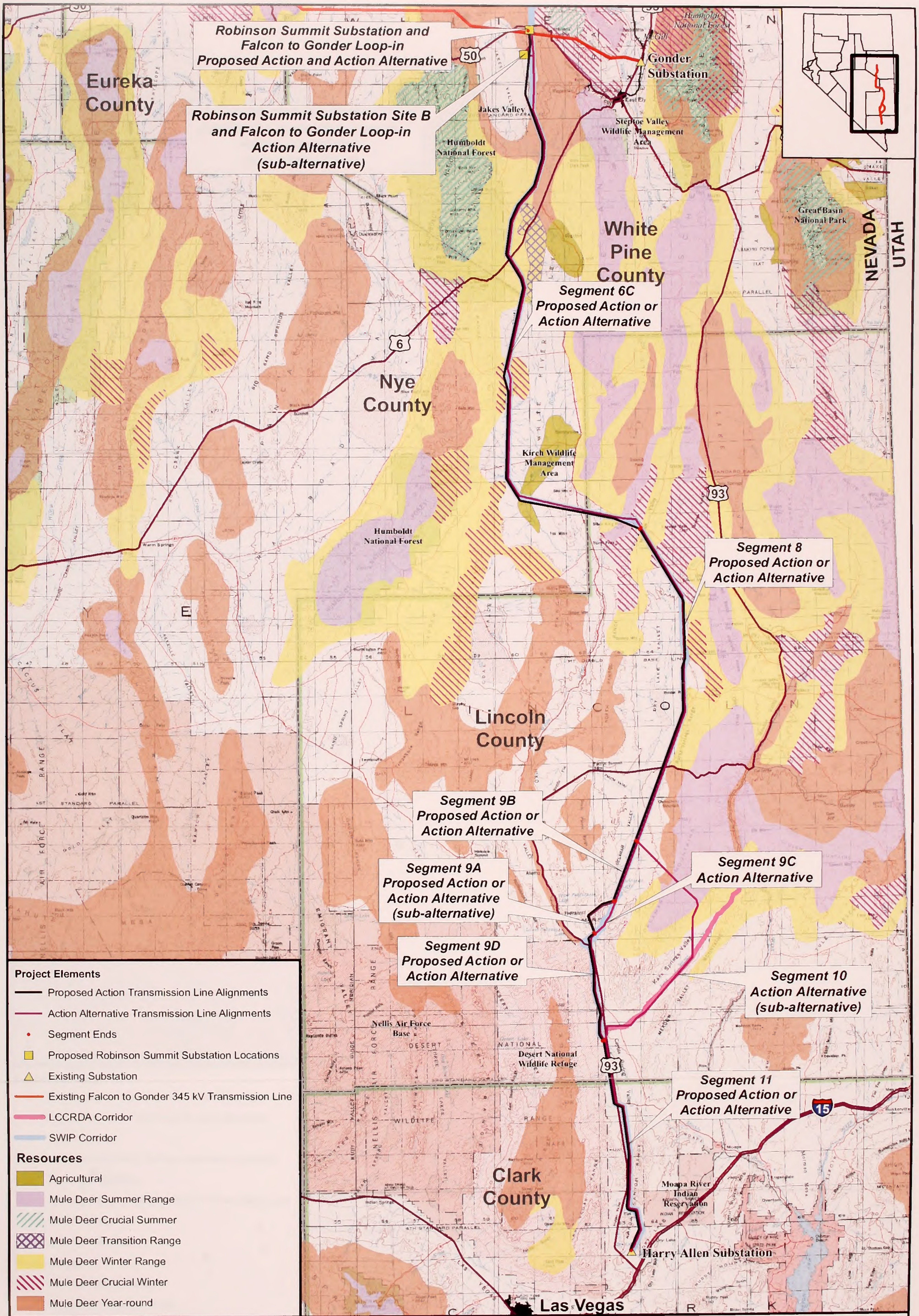


FIGURE 3.8-4b
MULE DEER
BIG GAME RESOURCES
ON LINE PROJECT

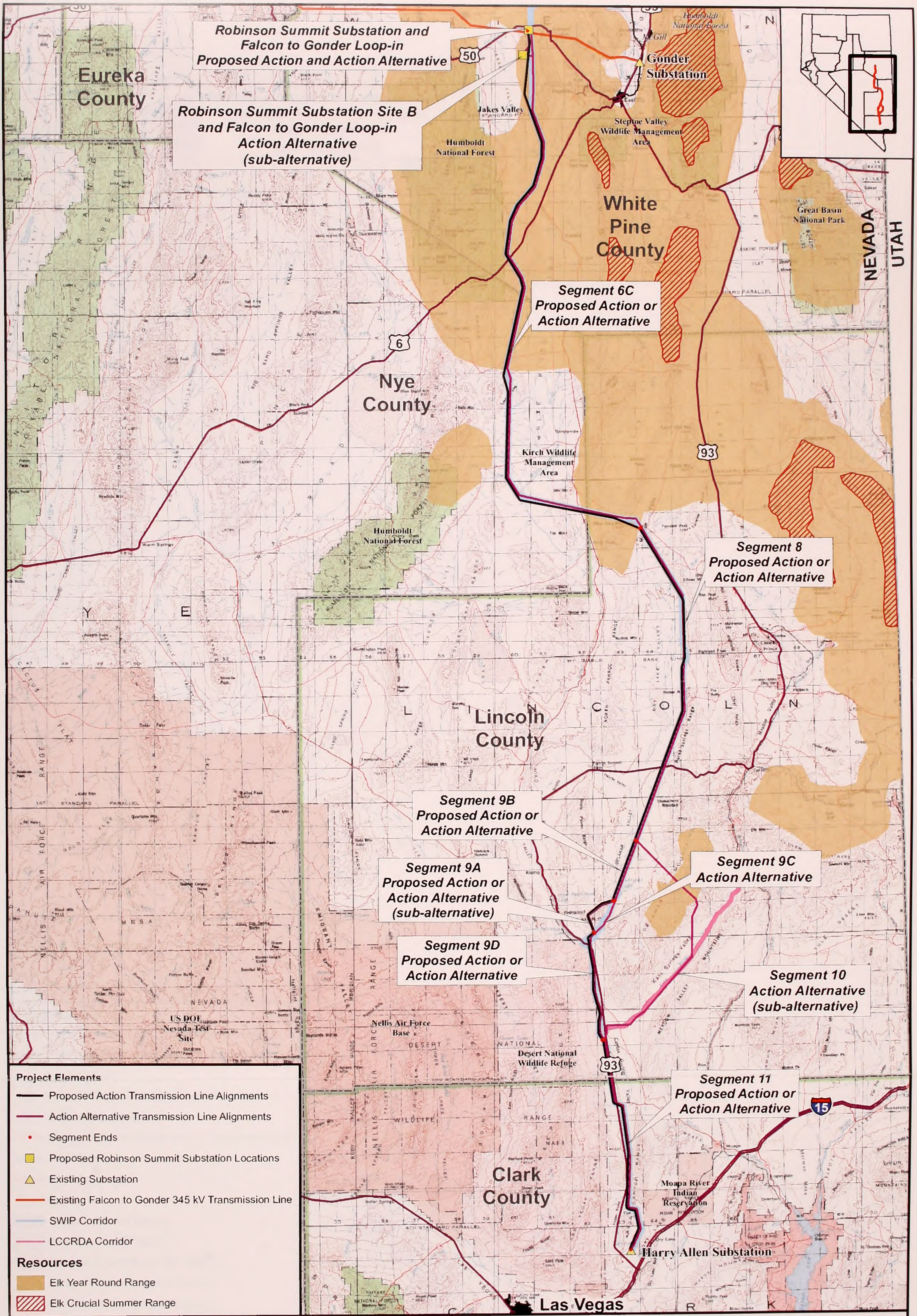


FIGURE 3.8-4c
ELK
BIG GAME RESOURCES
ON LINE PROJECT

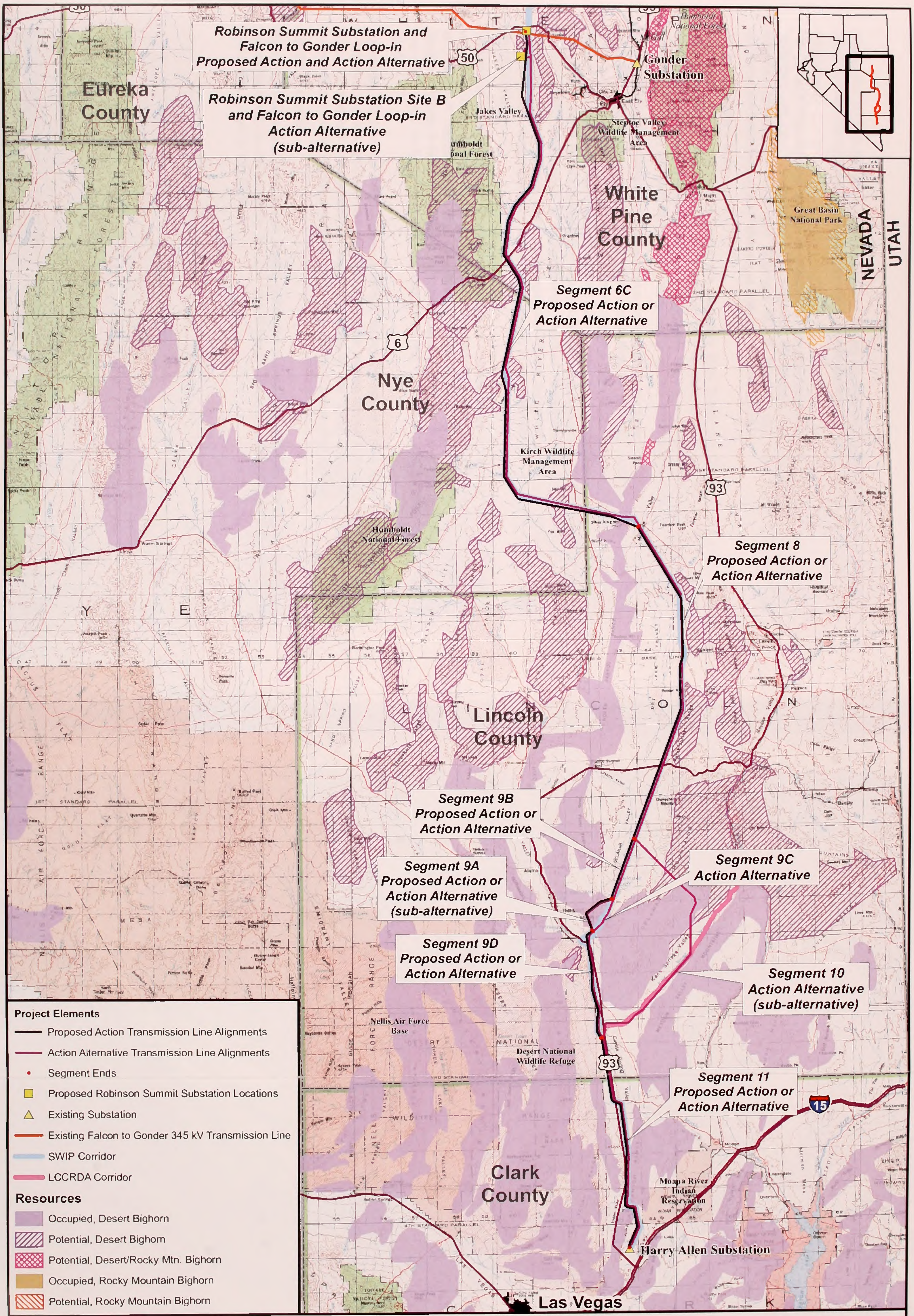


FIGURE 3.8-4d
BIGHORN SHEEP
BIG GAME RESOURCES
ON LINE PROJECT

Appendix 3D lists the bird species observed during the baseline surveys, although numerous other species not observed are known to occur across the habitats found within the project area.

Waterfowl

The project area crosses over or is adjacent to several riparian areas that support a variety of waterfowl species. Transmission Line Segment 6C crosses the southern end of the Kirch Wildlife Management Area and Segment 9D is located less than 1,000 feet from the southeastern boundary of the Pahranagat National Wildlife Refuge.

3.8.3.4 Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act (16 U.S. Code 703-711). Executive Order 13186 (66 FR 3853), signed by President Clinton in January 2001, required federal agencies taking actions that may negatively impact migratory birds to develop a MOU with the USFWS to promote various migratory bird programs and conservation considerations.

A list of Birds of Conservation Concern was developed as a result of a 1988 amendment to the Fish and Wildlife Conservation Act. This Act mandates that the USFWS "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973." The goal of the Birds of Conservation Concern species list is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions. Therefore, on any actions that could negatively impact migratory birds, the species listed as Birds of Conservation Concern would be reviewed in accordance with Executive Order 13186 (BLM 2008a).

The project area provides a diversity of habitats for many species of migratory birds. Sagebrush vegetation communities, comprising nearly 25 percent of the project area, have been identified as Priority A habitat under the *Coordinated Implementation Plan for Bird Conservation in Nevada*. Priority A habitat is defined as habitat being under high threat, having high opportunity, and high value to birds statewide (Nevada Steering Committee Intermountain Joint Venture 2005).

Appendix 3D lists the bird species observed during the baseline surveys, although numerous other bird species not observed are known to occur across the habitats found within the project area. Additional information on migratory birds in the area, including status and trend information and distribution and trend maps is available in Sauer et al. (2008).

3.8.3.5 Fisheries

Perennial water sources are very limited within the project area and thus fishery resources are not expected to be impacted by the ON Line Project. Therefore, fishery resources will not be discussed further in this FEIS.

3.8.4 Specific Project Area Conditions

Appendix 3D displays the wildlife species observed in the project area during baseline surveys conducted in 2006, 2007, 2009, and 2010 (JBR 2007b, 2009, 2010b).

The following categories of wildlife inhabit and/or forage within the majority of the project area. Unless otherwise noted, they will not be discussed below under each specific Project feature.

- Bats
- Small Mammals
- Predatory Mammals
- Reptiles
- Migratory Birds
- Upland Game Birds

Threatened, Endangered, Proposed, and Candidate Species

Greater Sage-grouse: Greater sage-grouse habitat occurs throughout the White River Valley. There are eight leks (2 active) within 2 miles of the project area. **Figure 3.8-1** illustrates the type and location of these leks, and **Table 3.8-2** above shows the status and proximity of these leks to the nearest transmission line segment.

Desert Tortoise: The desert tortoise is known to occur within the project area. Specifically, tortoise habitat only occurs in Segments 9C, 9D, the southern portion of Segment 10 (sub-alternative), and Segment 11 of the project area (**Figure 3.8-2**). Suitable desert tortoise habitat does not occur north of these segments.

BLM Sensitive and State of Nevada Special Status Species

Pygmy Rabbit: Pygmy rabbits or their sign (i.e. pellets and burrows) were recorded in the RSS-Site B sub-alternative area, including the 345 kV transmission loop-ins and access roads, plus Segment 6C (**Figure 3.8-3a**).

Raptors, includes Bald and Golden Eagles: Many species of raptors utilize the diversity of habitats that exist throughout all of the transmission line segments (**Figures 3.8-3a and 3.8-3b**). Two separate sections of Segment 6C are situated within known ferruginous hawk nesting habitat areas that span the entire 2,640' width of the SWIP Utility Corridor. During baseline surveys, unidentified cliff nests were discovered south of Segment 6C (Proposed Action) in the Gap Mountain area. Two inactive ferruginous hawk nests were noted in the RSS-Site B sub-alternative survey area. The Robber's Roost Hills in Segment 8 is a particularly active raptor nesting area; in addition to several stick nests, two fledgling peregrine falcons were observed there. A golden eagle fledgling was observed sitting on a nest within the northwestern portion of Segment 10 (sub-alternative) and an active golden eagle nest was observed in Segment 8.

Western Burrowing Owl: A burrowing owl was observed in the northern portion of Kane Spring Valley, near Segment 10 (sub-alternative). Burrowing owls likely forage within the diversity of habitats that exist throughout much of the transmission line segments.

Banded Gila Monster: This species is known to occur in Clark and Lincoln counties and occupies the same general habitat as the desert tortoise (**Figure 3.8-2**). However, due to the elusive nature of the Gila monster very few historical sitings have been recorded. Baseline surveys for desert tortoise conducted in Segments 9D, 10 (sub-alternative), and 11 yielded no observations or signs of Gila monster individuals.

Kangaroo Mouse: The dark kangaroo mouse has been documented in Dry Lake Valley (Ambos et al. 2007). **Figures 3.8-3c** and **3.8-3d** show potential dark kangaroo mouse habitat in relation to the project area. The Robinson Summit Substation sites, the 345 kV transmission loop-ins, and Segments 6C, 8, and 9B would be situated within or immediately adjacent to modeled, potentially suitable dark kangaroo mouse habitat.

General Wildlife

Pronghorn Antelope: With the exception of some higher elevation areas, the RSS-Site B sub-alternative area, along with transmission line Segments 6C, 8, 9B, and 10 (sub-alternative), all pass through pronghorn year-round range (**Figure 3.8-4a**).

Mule Deer: Several transmission line segments pass through mule deer year-round, agricultural, winter range, summer range, and crucial winter range (**Figure 3.8-4b**). **Table 3.8-3** below indicates which transmission line segments are within and/or adjacent to mule deer crucial winter range. No crucial summer range occurs within the project area.

TABLE 3.8-3 MULE DEER CRUCIAL WINTER RANGE PROXIMITY TO ON LINE PROJECT COMPONENTS

PROJECT COMPONENT	PROXIMITY TO PROJECT COMPONENT
Segment 6C	Adjacent to crucial winter range where Segment 6C intersects Highway 6
Segment 6C	Portions within crucial winter range near Wells Station in the Grant Range
Segment 6C	Adjacent to crucial winter range near the northern toe of the Golden Gate Range
Segment 6C	Portions within crucial winter range of Silver King Pass on the Schell Creek Range
Segment 8	Portions within crucial range surrounding the Bristol Wells area
Segment 8	Adjacent to crucial range along the western slope of the Highland Range

Rocky Mountain Elk: There is no elk crucial winter or crucial summer range within the project area. Several transmission line segments pass through elk year-round range and the RSS-Site B sub-alternative area is situated in elk year-round range (**Figure 3.8-4c**). **Table 3.8-4** below indicates which transmission line segments are within and/or adjacent to elk year-round range. Elk sign was numerous in the vicinity of the Robinson Summit Substation and the Silver King Pass portion of Segment 6C. Elk were observed within the RSS-Site B sub-alternative study area (JBR 2010b).

TABLE 3.8-4 ELK YEAR-ROUND RANGE PROXIMITY TO ON LINE PROJECT COMPONENTS

PROJECT COMPONENT	PROXIMITY TO PROJECT COMPONENT
Segment 6C	Portions within year-round range between Robinson Summit and Wells Station in the Grant range
Segment 6C	Portions within year-round range of Silver King Pass on the Schell Creek Range
Segment 10 (sub-alt)	Portions within year-round range in the Meadow Valley Mountains
RSS-Site B (sub-alt)	Within year-round range in foothills of Egan Range, east side of Jakes Valley

Bighorn Sheep: No occupied Rocky Mountain bighorn sheep range is located near any of the transmission line segments. Several transmission line segments pass through occupied and potential desert bighorn sheep range (**Figure 3.8-4d**). **Table 3.8-5** indicates which transmission line segments are within and/or adjacent to occupied desert bighorn sheep range.

TABLE 3.8-5 OCCUPIED DESERT BIGHORN RANGE PROXIMITY TO ON LINE PROJECT COMPONENTS

PROJECT COMPONENT	PROXIMITY TO PROJECT COMPONENT
Segment 6C	Portions within occupied range surrounding Silver King Pass of the Schell Creek Range
Segment 9A	Within occupied range
Segment 6C	Within occupied range
Segment 10 (sub-alt)	Portions within occupied range of the Delamar Mountains
Segment 10 (sub-alt)	Adjacent to occupied range along the western foothills of the Meadow Valley mountains
Segment 11	Portions within occupied range of the Arrow Canyon Range

Waterfowl: Two key waterfowl areas have been identified within proximity to but not within any of the transmission line segments. Segment 6C passes south of the southern boundary of the Kirch Wildlife Management Area and the northern portion of Segment 9D passes less than 1,000 feet from the east boundary of the Pahranagat National Wildlife Refuge.

Falcon Substation

Boulder Valley is known to be utilized by both mule deer (*Odocoileus hemionus*) and pronghorn antelope (*Antilocapra americana*). Antelope, coyote, and black-tailed jackrabbit sign were present in the area. Birds observed during the site visit include the common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), and Say's Phoebe (*Sayornis saya*). A pair of Say's Phoebes was observed nesting inside the substation fence on a steel I-beam structure.

3.9 Range Resources

There are 242 grazing allotments within the BLM's Ely District. The Southern Nevada District has approximately 63 allotments, although only 5 of these are available for grazing. Of these 305 allotments, 28 are within the ON Line project area, although not all of these would be affected (see **Figures 3.9-1a and 3.9-1b**). These 28 allotments are open rangelands that have the potential to be used periodically, at various intensities, for livestock grazing.

In addition, wild horses inhabit some of the rangeland within the project area. Wild horses are protected by the Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195, as amended). There is only one Herd Management Area (HMA) within the project area. Horses are actively managed in HMAs to maintain herd health and the health of rangelands (BLM 2007b; see **Figure 3.9-2**).

3.9.1 Area of Analysis

The area of analysis includes the components of the Proposed Action and Action Alternative and the entirety of any allotment or HMA directly affected by the project.

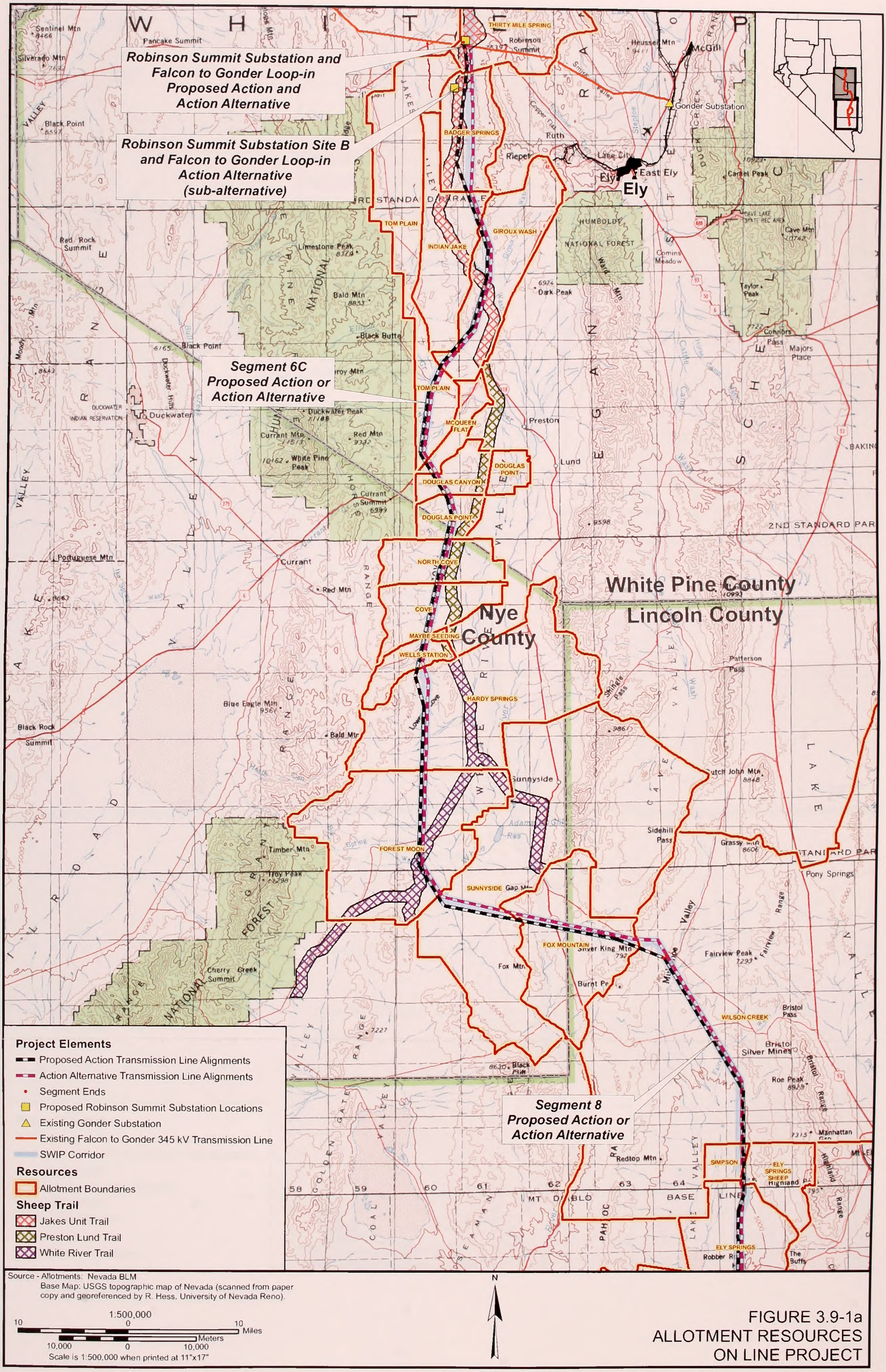


FIGURE 3.9-1a
ALLOTMENT RESOURCES
ON LINE PROJECT

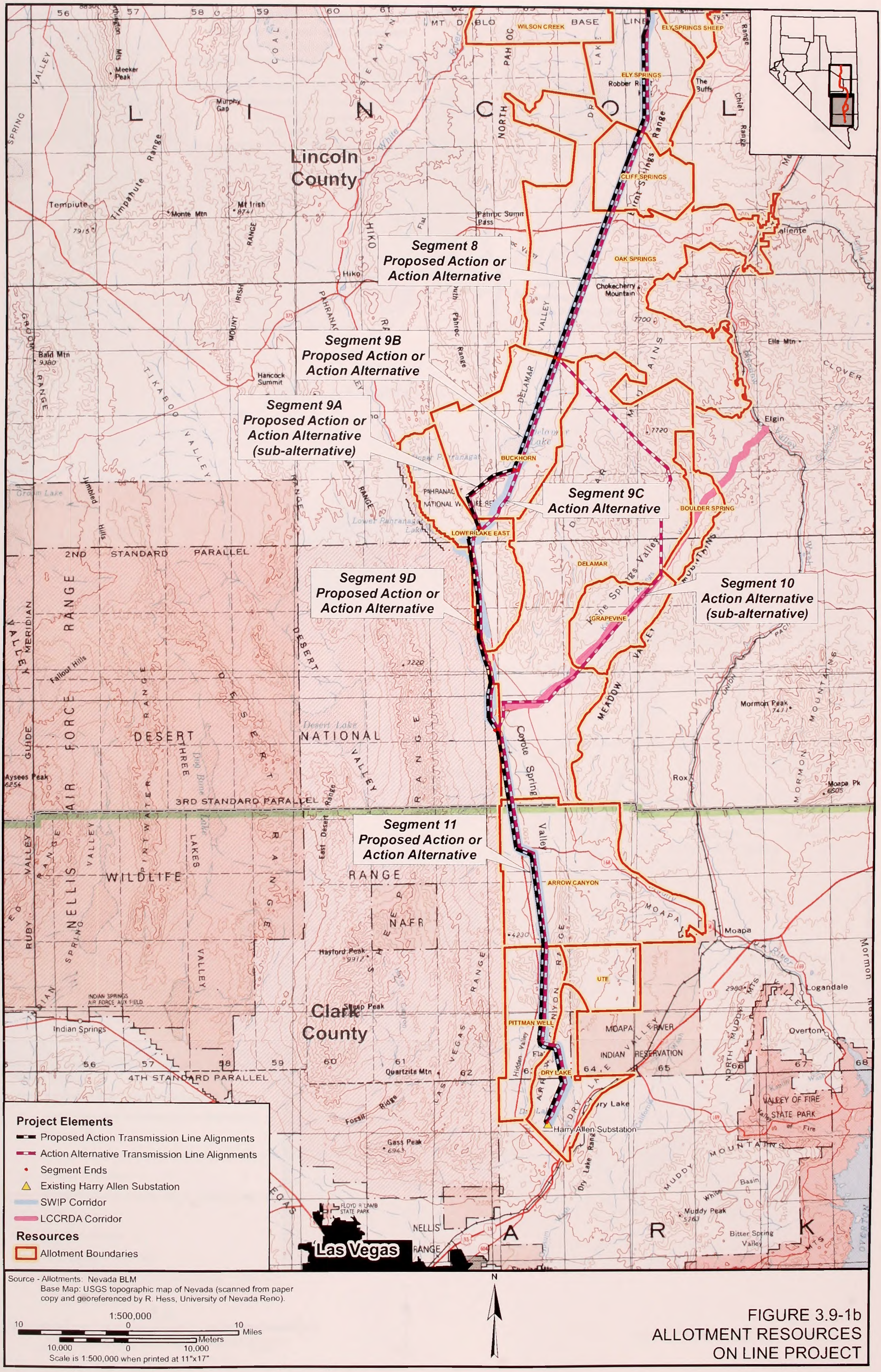


FIGURE 3.9-1b
ALLOTMENT RESOURCES
ON LINE PROJECT

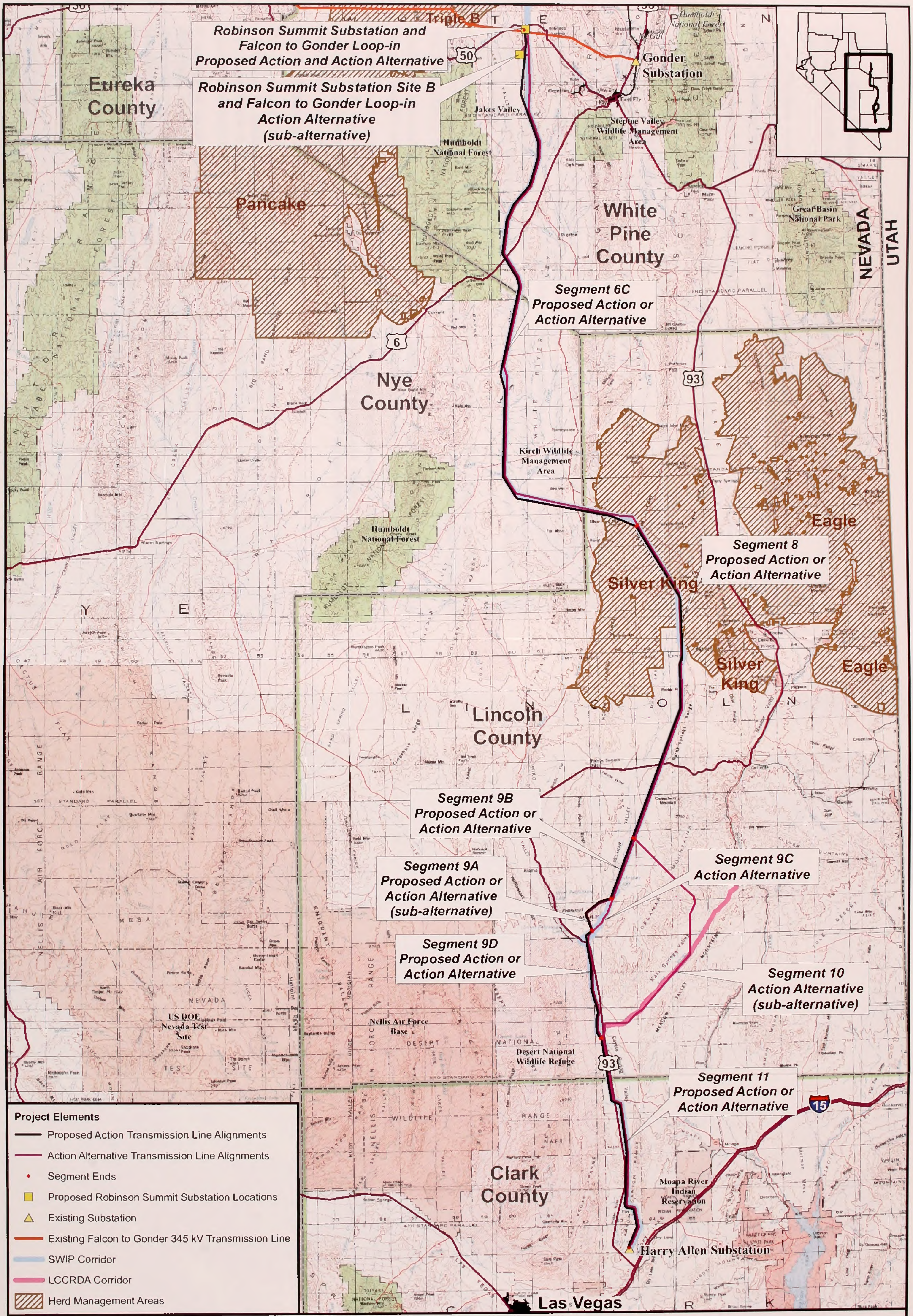


FIGURE 3.9.2
HERD MANAGEMENT AREAS
ON LINE PROJECT

3.9.2 Data Sources and Methods

The following indicators were considered when describing the affected environment for range resources:

- Number of livestock allotments or HMAs that have one or more elements of the ON Line Project situated within them, and the numbers of livestock or horses currently using, or approved to use, these areas
- Number of Animal Unit Months (AUM) within affected allotments
- Vegetation types found within the area of analysis and their overall value as livestock forage (high or low forage productivity)
- Locations of water sources, springs, and other range improvements in relation to ON Line project components

Each livestock allotment or HMA through which ON Line Project components pass is included in the descriptions below. The acreage of the allotment or HMA is provided, as well as the number of AUMs available for livestock grazing on these lands. An AUM is the amount of forage required to maintain a cow, cow and calf less than six months old, a bull, or five sheep, for one month (BLM 2009d), and in the arid west, it typically requires several acres to provide one AUM of forage (BLM 2007a). Forage is that portion of the vegetation supply that is eaten by animals. For cows and horses, this is generally grasses. The BLM determines the number of AUMs available on each allotment based on forage production studies and other evaluations of rangeland health.

Vegetation types and estimated forage productivity information in this chapter are based on Natural Resource Conservation Service (NRCS) (USDA 2007c), as well as original vegetation data presented in **Section 3.7**.

Additional information about the location of the allotment or HMA relative to roads, water sources, human settlements, or period of use is also included where information was available.

Information about water sources, springs, and other range improvements was gathered from existing BLM data regarding livestock watering facilities, the Nevada State Engineer's Office website (http://water.nv.gov) (NDWR 2006), and seep, spring, and stream survey data collected for this EIS. This information is presented in **Section 3.2.3.2**.

3.9.3 Existing Conditions

The proposed ON Line Project and its components would be constructed on a landscape dominated by grass and shrublands in an arid area receiving 5 to 14 inches of precipitation per year (see **Table 3.6-2**). Most of these lands are managed by the BLM and are divided into grazing allotments used principally for cattle grazing, some sheep grazing, and wildlife habitat.

A number of ranchers have grazing permits with grazing preference for one or several of the allotments within the project area depending upon the permit. In the project area, these allotments are generally grazed for a set period and may include year-round grazing, with livestock rotating use based on the terms and conditions of the permit. The BLM manages the number of livestock on the allotment by conducting forage inventories and tracking the number of AUMs used. To maintain plant health over the long term, roughly half of the forage available within an allotment is left standing each year. This allows plants to continue making and storing food for future years.

There are three designated sheep trails running from north to south that the transmission line alignments parallel and at three places intersect (**Figure 3.9-1a**). The trails are a mile wide and connect to each other. The Jakes Unit Trail is the northernmost unit. This trail leads into the middle trail, the Preston Lund Trail. The Preston Lund Trail leads into the southern trail, the White River Trail. Three ranchers are authorized by the BLM to use these trails for spring and fall sheep trailing. All three ranchers graze sheep on the northern (summer) and southern (winter) allotments within the Ely BLM District.

The project area also contains 1 HMA. HMAs are managed by determining Appropriate Management Levels (AMLs). AMLs are defined as the number of wild horses or burros that can be sustained within a designated HMA while maintaining a natural ecological balance, in keeping with the multiple-use management concept for the area (National Wild Horse Association 2007). The BLM determines the appropriate number of wild horses and burros that each herd management area can support through intensive land use management planning efforts, including range forage inventory and requests for input from the public (BLM 2007b).

Vegetation in the project area is generally dominated by shrubland species. The most common shrub species are big sagebrush, Douglas rabbitbrush, winterfat, and greasewood in the north and central portions of the project area. Blackbrush and creosote bush become more common as one moves southward. Two low tree communities also occur: pinyon-juniper woodlands occur at higher elevations in the north and Joshua tree forests occur at low to mid elevations in the south. Grasses are a minor or sub-dominant component of these communities, but become dominant in the uncommon hydrophyllic plant communities identified in the project area. Common grasses in the project area include Indian ricegrass, various needlegrasses, alkali sacaton, Sandberg bluegrass, bluebunch wheatgrass, basin wildrye, big Galleta, and alkali saltgrass, as well as sedges and rushes in seasonally wet areas. Shrub communities are often a complex of the species noted above, although areas with only one to a few species are relatively common. For example, islands of winterfat monocultures grow on silty soils on alluvial fans between Wyoming big sagebrush-dominated communities. Salt desert shrub communities consist of only salt-tolerant species and grow near valley bottoms. Grass-rich areas, plant communities located near water, and the areas of winterfat monocultures are important forage areas to livestock and horses as these species are palatable, productive, and nutritious. Sagebrush is also important to many wildlife species as browse and cover.

Although the landscape is arid, numerous springs outcrop at the base of nearby mountains to create isolated wet and sometimes saline meadows. Some of these springs are used as water sources for livestock.

Vegetation and forage availability varies significantly with proximity to water, soil depth, and texture; therefore, some portions of allotments or HMAs may have good forage while others have poor forage.

Water is also a variable resource. Some allotments and HMAs have several springs and/or developed water sources. Others may have only one water source. Cattle and horses move up to several miles a day to reach good forage and good water, and will often congregate around water sources or on high, breezy ground (Griffith 1999).

Natural mortality rate information for cattle is unavailable. Causes of mortality include disease, animal predation, weather-related stress, or collisions with vehicles. In a typical cow-calf operation, mother cows produce one calf per year. Cows that do not produce a calf are generally sold. Depending on the operation, mother cows are kept for 4 to 7 years, steers are

kept for 6 to 18 months, and female calves are either sold with the steers or kept to replace older mother cows. Very few male calves are kept as bulls.

Horses have an average mortality rate of about 5 percent per year and a herd growth rate of about 20 percent per year. Populations are kept in check by rounding up the horses and auctioning them off every few years. Any unadopted horses and/or foals are sent to holding facilities (Noyes 2007).

3.9.4 Specific Project Area Conditions

Grazing Allotments

Up to 28 grazing allotments would be crossed by one or more of the proposed transmission facilities. **Table 3.9-1** lists the allotments intersected by the transmission facilities, allotment acreage, the number of AUMs designated within the allotment, and the acres required to support an AUM of forage. Not all proposed segments of the transmission facilities would be developed, thus not all the allotments noted below would be affected. All allotments within the direct and indirect effects area in the Southern Nevada District have been relinquished. That is, there is no active grazing by livestock within these allotments, thus the AUMs are not used.

TABLE 3.9-1 ALLOTMENTS INTERSECTED BY THE ON LINE PROJECT

ALLOTMENT	TOTAL ACRES IN ALLOTMENT	AUMS IN ALLOTMENT*	ACRES PER AUM
Thirty Mile Spring	188,872	8,405**	22
Badger Springs	33,755	1,412***	24
Indian Jake	48,894	2,948	17
Giroux Wash	58,017	3,107	19
Tom Plain	81,080	4,439	18
McQueen Flat	11,694	496	24
Douglas Canyon	15,043	175	86
Douglas Point	13,889	368	38
North Cove	27,296	879	31
Cove	28,273	3,967	7
Wells Station	13,925	368	36
Hardy Springs	125,651	3,478	36
Forest Moon	117,532	2,263	52
Sunnyside	237,408	5,402	44
Fox Mountain	73,430	6,322	12
Wilson Creek	1,071,661	54,070	20
Simpson	8,088	747	11
Ely Springs Sheep	24,238	4,248	6
Ely Springs	57,850	4,248	14
Cliff Springs	37,019	2,043	18
Oak Springs	197,950	9,268	21
Buckhorn	80,664	3,370	24
Lower Lake East	52,550	640	82
Arrow Canyon	114,987	0	-
Pitman Well	43,210	0	-
Dry Lake	35,414	0	-
Delamar	203,000	5,558	37
Grapevine	22,000	560	39

*AUM Data from Wilson 2007, unless otherwise noted, cattle
**AUM Data from Seal 2010, cattle/sheep
***AUM Data from Seal 2010, sheep

The Robinson Summit Substation would be located in the Thirty Mile Spring allotment. The RSS-Site B sub-alternative would be located within the Badger Springs allotment within the Jakes Unit Sheep Trail. The Falcon Substation is on private lands. Remaining project facilities include transmission towers and temporary facilities such as access roads, staging, and wire pulling areas.

There are corrals located southwest of the Proposed Action Segment 6C alignment, about 3 miles south of the RSS-Site B sub-alternative, within the Jakes Unit Trail. They are used for sheep operations, mostly in the spring when the animals are moving north. The corrals are large enough to support lambing or shearing.

HMAs

The Silver King HMA is within the direct affects area of the transmission facilities (**Figure 3.9-2**).

Segment 6C enters the Silver King HMA from the west, crosses the southern third of the Schell Creek Range, then becomes Segment 8, as the transmission line turns south to run along the Dry Lake Valley through this HMA.

US-93 bisects the Silver King HMA to the east of the proposed alignment; the west boundary of the HMA is defined by SR-318 and the east edge of the South Egan Range. The HMA includes most of Cave Valley and Muleshoe Valley on the north. It cuts across the North Pahroc, Dry Lake Valley, and Highland Range on the south. It is 606,000 acres in size (947 square miles). The Silver King HMA surrounds the communities of Pioche and Casselton on three sides; the communities are located in a lobe of land not part of the HMA.

This HMA is managed for 60 to 128 horses (BLM 2008a), and there are currently an estimated 438 horses using the HMA (Noyes 2009). There are no wild burros in the project area.

Vegetation and Forage Production

As noted above, vegetation within the project area is made up mostly of grass and shrublands in the north and central portions of the project area, and sparsely vegetated shrublands in the south portion. Some areas support more vegetation than other areas, and are of higher value to grazing animals. While cows prefer to eat grass, sheep prefer a more mixed diet that includes forbs and shrubs. Thus, there can be a difference in the value of forage produced in an area in a given year depending on what kind of livestock are using the area.

Plant and forage production data were collected at the two proposed substation sites by BLM Range Scientists in June 2010. For the proposed Robinson Summit substation, located in the Thirty Mile Spring allotment, forage production for cattle was approximately 33 pounds per acre (30 acres per AUM). The proposed RSS-Site B sub-alternative, located in the Badger Springs allotment, produced about 22 pounds per acre of forage for cattle (45 acres per AUM). These areas are also grazed by sheep, which browse on the extensive black sagebrush growing in these areas. For sheep, the Robinson Summit Substation area would provide approximately 955 pounds of useable forage per acre (1 acre per AUM). The RSS-Site B sub-alternative area produced approximately 906 pounds per acre of sheep forage (1.1 acres per AUM).

When current, local data are not available, NRCS forage production records can be used. The NRCS maintains plant production records, by species, for virtually all rangelands in the U.S. These records, which are averaged over several years before being published, are used in Ecological Site Descriptions (ESDs), which are used to describe rangeland health and current and potential plant productivity. The ESDs are tied to the soil types identified as part of the national soil survey system (NRCS 2003, 2004). While NRCS data are somewhat generalized,

they still provide a reasonable estimate of vegetation and forage production. NRCS data are used below to illustrate the range of forage production on rangelands within the project area. The examples below assume forage production rates for cattle.

Vegetation and forage production on Segment 6C in the floodplain of the White River near Lund ranges from about 5,000 pounds total vegetation and 4,500 pounds forage per acre in a good year. However, some areas on Segment 11 near the south end of the transmission line, where temperatures are higher and the area is dominated by annual plants, produce roughly 90 pounds total vegetation and 23 pounds forage per acre in a poor year. There are occasional playas (dry lakebeds) along the transmission corridor that are barren of all vegetation and thus produce no forage. These three types of areas are extreme examples: a more typical vegetation/forage production rate in the project area would be about 200 to 400 pounds of vegetation and 100 to 200 pounds of forage per acre in an average year. Compared to irrigated pastureland these production rates are quite low. **Table 3.9-2** shows how different lands within the project area produce different amounts and types of vegetation.

TABLE 3.9-2 VEGETATION AND FORAGE PRODUCTION RATES FOR SELECTED AREAS WITHIN THE ON LINE PROJECT

ECOLOGICAL SITE / SOIL SERIES	TOTAL ANNUAL AIR-DRY PRODUCTION (LBS/ACRE): VEGETATION / FORAGE			DOMINANT SPECIES AND THEIR PERCENT COVER
	GOOD YEAR	FAIR YEAR	POOR YEAR	
SEGMENT 6C				
Soil Map Unit Number/Name: 951 – Nyak-Umwell-Pern association, <100 acres				
Loamy Bottom 10 – 14 P.z R028BY003NV) Pern	5,000 / 4,500	2,500 / 2,250	1,500 / 1,350	Basin wild rye 70%
Soil Map Unit Number/Name: 124 – Tecomar-Pookaloo association, 1476 acres				
Shallow Calcareous Hill 14+ P.z. (028BY090NV) Tecomar	400 / 140	250 / 88	125 / 44	Black sagebrush 35% Bluebunch wheatgrass 20% Scribner needlegrass 5% Stansbury cliffrose 5%
SEGMENT 8				
Soil Map Unit Number/Name: 1510 - Raph-Zimwala-Heist association, 1108.9 acres				
Shallow Silty 8-10 P.z. (028BY009NV) Raph	500 / 200	400 / 160	300 / 120	Shadscale 45% Indian ricegrass 25% Bottlebrush squirreltail 10%
SEGMENT 9A				
Soil Map Unit Number/Name: 1460 – Pintwater-Rochpah association				
Bouldery Slope 5-8 P.z. (R029XY085NV) Pintwater	450 / 240	500 / 200	300 / 120	Desert needlegrass 25% Green ephedra 20% Needleandthread 5%
SEGMENT 9B				
Soil Map Unit Number/Name: 1520 – Fax-Yody-Broland association, 1096.4 acres				
Shallow Clay Loam 10-12 P.z. (028BY089NV) Broland	450 / 248	300 / 193	150 / 83	Indian ricegrass 25% Black sagebrush 25% Thurber's needlegrass 20%
SEGMENT 9C				
Soil Map Unit Number/Name: 1041 – Akela-Rochpah-Rock Outcrop association				
Loamy Slope 5-7 P.z (R030XB0028NV) Akela	800 / 440	600 / 330	400 / 220	Desert needlegrass 40% Shadscale 10% Nevada ephedra 10%
SEGMENT 9D				
Soil Map Unit Number/Name: AB – Arizo-Bluepoint association, 622.0 acres				
Limy 3-5 P.z. (R030XB019NV) Arizo	200 / 10	125 / 6	75 / 4	White bursage 65% Creosote bush 10% Range ratany 5%

ECOLOGICAL SITE / SOIL SERIES	TOTAL ANNUAL AIR-DRY PRODUCTION (LBS/ACRE): VEGETATION / FORAGE			DOMINANT SPECIES AND THEIR PERCENT COVER
	GOOD YEAR	FAIR YEAR	POOR YEAR	
SEGMENT 10 SUB-ALT				
Soil Map Unit Number/Name: 1100 – Geta – Arizo association, 215 acres				
Dry Floodplain (RO28BY041NV) Geta	2,400	1,600	1,200	Big Galleta 65% Bush muhly 15% Indian ricegrass 10%
SEGMENT 11				
Soil Map Unit Number/Name: CTC – Colorock-Tonopah association, 7567.8 acres				
Limy 5-7 P.z. (R030XB005NV) Tonopah	325 / 81	240 / 60	90 / 23	Misc. shrubs 17% Misc. annual forbs 15% Big galleta 10% Misc. annual grasses 5%

Source: NRCS Undated; NRCS Soil surveys: Lincoln County, North Part (2000), Western White Pine County (1998), and Clark County (2006)

A few range improvements have been completed in the project area. These include seedings in the McQueen Flat and Douglas Canyon Allotments where Segment 6C would be located. Seedings are conducted after range fires kill native vegetation, or to improve rangeland forage production on rangelands. If successful, seedings increase vegetation and forage production substantially; however, because of the arid nature of the project area, seedings may produce less forage than the area did prior to treatment. Seedings conducted as range improvements generally increase forage volumes.

There are very few fences within the project area as the vast majority of the land is open range. There is one set of corrals, as discussed above, approximately 3 miles south of the proposed RSS-Site B sub-alternative.

Water Wells

There are several wells, springs, and stock-watering facilities located along the proposed transmission segments. Information about these facilities was collected from the Nevada State Engineer website (NDWR 2006), field surveys for this FEIS, and the BLM Ely and Southern Nevada District offices. However, not all developed stock watering locations have State Engineer records, nor have they all been mapped or recorded in BLM records. The information in **Table 3.9-3** is the most complete list of water wells, springs, and stock watering tanks available at this time.

TABLE 3.9-3 WELLS, SPRINGS, AND STOCK WATERING FACILITIES LOCATED WITHIN 1.5 MILES OF THE ON LINE PROJECT

ON LINE PROJECT ELEMENT	ALLOTMENT	HMA	TOWNSHIP & RANGE	SECTION	LOCATION	OWNER – TYPE	DISTANCE TO PROJECT ELEMENT
Robinson Summit Substation	Thirty Mile Spring	None	18N, 61E	19	NW ¼	BLM - Summit Spring	<1 miles
Segment 10 Sub-Alt	Grapevine	None	10S, 64E	9	NW ¼	Unknown – Reservoir	1.5 miles

3.10 Cultural Resources

The National Historic Preservation Act (NHPA) of 1966, as amended, the Archaeological Resources Protection Act of 1979 (ARPA), the American Indian Religious Freedom Act (AIRFA), and the Native American Graves Protection and Repatriation Act (NAGPRA) are the primary laws regulating preservation of cultural resources. Federal regulations obligate federal agencies to protect and manage cultural resource properties.

The NHPA sets forth procedures for considering effects to historic properties and supports and encourages the preservation of prehistoric and historic resources. It directs federal agencies to consider the impacts of their actions on historic properties. The NHPA established the Advisory Council on Historic Preservation (ACHP) and tasked the ACHP with administering and participating in the preservation review process established by Section 106. Section 106 of the NHPA, as amended, requires federal agencies to take into account any action that may adversely affect any structure or object that is, or can be, included in the National Register of Historic Places (NRHP). These regulations, codified at 36 CFR 60.4, provide criteria to determine if a site is eligible. Beyond that, the regulations define how those properties or sites are to be dealt with by federal agencies or other involved parties. These regulations apply to all federal undertakings and all cultural (archaeological, cultural, and historic) resources.

The purpose of ARPA is to secure the protection of archaeological resources and sites that are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources.

The AIRFA was passed in 1978 to "protect and preserve for American Indians their inherent right to freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites."

NAGPRA became law in 1990; the regulations implementing the statute were completed and went into effect in January 1996. This law formally affirms the rights of Indian tribes, Native Alaskan entities, and Native Hawaiian organizations to custody of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony with which they have a relationship of cultural affiliation. In addition, the law and regulations describe procedures designed to ensure that all Americans can derive educational, historical, and scientific value from the remains and objects covered by the statute through public interpretation, documentation, and study.

Cultural resources are defined as any definite location of past human activity identifiable through field survey, historical documentation, and/or oral evidence. Cultural resources have many values and provide data regarding past technologies, settlement patterns, subsistence strategies, and many other aspects of history. The term "Cultural Resources" can apply to "those parts of the physical environment – natural and built – that have cultural value of some kind to some sociocultural group." This can include spiritual places, historic resources, archaeological resources, Native American cultural items, historical objects, religious practices, cultural uses of the natural environment, community values, or historical documents (King 1998: 7,9).

A Traditional Cultural Property (TCP) is a property associated with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in

maintaining the continuing cultural identity of the community (Parker and King 1994)"; this property type may be determined eligible for the NRHP if it meets criteria found in 36 CFR 60.4.

3.10.1 Area of Analysis

A Programmatic Agreement establishing an Area of Potential Effect (APE) for cultural resources and outlining the methods of identification and treatment of cultural resources was completed for the ON Line Project and signed by the agencies (**Appendix 3E**). Under the Programmatic Agreement, the BLM has assumed responsibility for completing Section 106 compliance for cultural resources within the APE. The APE for assessment of direct and indirect effects includes all of the ON Line Project components associated with the Proposed Action and Action Alternative as described in **Chapter 2**.

Class III cultural resource inventories (systematic and detailed field inspections) were conducted for portions of the project area outside the SWIP Utility Corridor (Seymour et al. 2007, Young et al. 2007, and Gilreath et al. 2010). Archaeological sensitivity modeling was conducted for prehistoric and historic resources within the SWIP Utility Corridor (Carpenter et al. 2008), making use of the project-specific and comparable adjacent surveys. The archaeological sensitivity modeling utilizes existing NRHP-eligible site data, and provides levels of archaeological sensitivity through acreages of NRHP-eligible site area rather than number of NRHP-eligible sites.

3.10.2 Data Sources and Methods

Information regarding cultural resources in the project area was collected through literature searches and field inventory. Data for cultural resources includes record search information for an area 1-mile out from project components and field inventories of project components where comparable data does not exist, and results and/or extrapolation from previous applicable inventories (i.e., SWIP inventory).

3.10.3 Existing Conditions

3.10.3.1 Prehistory

The ON Line Project straddles two distinct areas—the Great Basin and eastern Mojave Desert. Boundary and transitional areas (peripheries) can be difficult to characterize. The period divisions for the Great Basin and the eastern Mojave regions are generally congruent. It appears that adaptive/technological/cultural changes occurred in the same general timeframes for both regions; this is likely even more true in transitional or boundary regions. Therefore, a simplified four-phase chronology, after Elston (1986) is presented here, summarized from Carpenter et al. (2008). The Late Archaic includes Formative and Post-formative cultural traits to acknowledge the agricultural influence towards the end of the sequence (Carpenter et al. 2008).

Pre-Archaic (12,000-7,000 Before Present (BP))

Throughout much of the Great Basin, this period is characterized by an emphasis on a relatively small set of highly ranked resources, which would have been abundant in wetland settings. During this time, hunting groups apparently made increasing use of small mammals, waterfowl and other birds, and fish (Jones et al. 2003). Within the Great Basin, sites that date to this period are rarely found (Elston 1986). Pre-Archaic complexes generally tend to be located along the bottomlands and playa margins of the ancient lakeshores of the Lahontan and Bonneville lake systems. The project area lies within a broad, elevated zone, which separates these two

paleo hydrological systems, and so may not have attracted early settlement for this reason (McGuire et al. 2004).

Early Archaic (7,000-4,000 BP)

Across the Great Basin, Early Archaic artifact assemblages are more diverse than in the previous period, with grinding tools and intensively used bifaces and scrapers common. These changes are thought to signal resource diversification, as a wider variety of resources including small game, seeds, and pinyon nuts became more important dietary constituents.

Middle Archaic (4,000-1,500 BP)

Across the Great Basin, the Middle Archaic is noted for the dramatic development of large semi-sedentary villages. Other distinctive traits include elaborations in material culture, house construction, obsidian tool production, and ceremonial activity directed particularly at the hunting of large game (Hildebrandt and McGuire 2002). At the same time, dietary faunal profiles reflect a comparatively sudden shift from large-game (bighorn) to small game, such as rabbits/hares, between 1,000 and 2,000 BP. Big-game hunting, particularly mountain sheep, remained an important subsistence activity, but sites containing seed processing tools and rabbit bones are fairly common. Quarry production and biface manufacturing associated with the major toolstone sources similarly developed to unprecedented levels (Gilreath and Hildebrandt 1997).

Late Archaic (1,500 BP to Euro-American Contact)

The Late Archaic in much of the Great Basin is marked by several technological changes. Around 1,500 years ago, the atlatl and dart were replaced by the bow and arrow, with a concurrent switch to smaller and lighter projectile points (e.g., Rose Spring and Desert series). Plant processing equipment becomes more elaborate and abundant, and ceramics appear in the archaeological record after about 900 BP.

There are indications that Fremont groups came into contact with eastern Nevada groups during this interval. The Fremont consisted of several groups of related semi-sedentary people centered in Utah who relied on a range of subsistence practices, from full-time foraging to full-time horticulture (Hockett and Morgenstein 2003; Madsen and Simms 1998).

The final group to enter this region, at about 700 BP, was Numic-speaking populations. This group, the Western Shoshone, may have replaced the Fremont and are thought by some researchers (Lamb 1958; Bettinger and Baumhoff 1982) to have expanded east and north from a homeland in southern California. Archaeological literature characterizes Numic groups as having practiced a broad-spectrum, foraging lifeway, concentrating on a greater range of resources that were costly to collect and process, thus out-competing and displacing pre-Numic inhabitants (Bettinger and Baumhoff 1982). The Numic groups who occupied the Great Basin at the time of Euro-American contact were mostly mobile hunters and gatherers who moved in a seasonal pattern. Their contemporary successors continue to occupy the Great Basin.

3.10.3.2 Ethnohistory

At the time of Anglo-American intrusions, most of the project area was occupied by the Southern Paiute and the Western Shoshone (which includes the Goshute and Shoshone). Traditional lands of the Goshute Shoshone extend west from Utah, with a few Goshute settlements occurring as far west as Egan Canyon. In southern Nevada, the traditional use areas for the Western Shoshone and Southern Paiute meet in the general vicinity of the Lincoln-Clark county line. The Western Shoshone and Southern Paiute interacted extensively along this territorial boundary.

Pre-contact Western Shoshone and Southern Paiute are described as fairly uniform cultures with only minor local variations, based entirely on hunting and gathering. The Western Shoshone hunted and gathered in family areas based on yearly cyclical migration patterns. The bands lived in widely scattered winter villages consisting of a few families, coming together for communal activities (Steward 1938). Native lifeways were initially disrupted in the 1820s with the appearance of trappers and explorers; and largely restructured with the development of local mining and ranching/farming operations.

3.10.3.3 History

Histories of the area have been written (James 1981; Angel 1958; Elliot 1987) and will not be reiterated here. Following is a brief summary of history pertinent to the resources in the project area.

Transportation and Communication

The early history of Nevada is tied to the major transportation corridors linked to substantial settlements outside of the state. Early Nevada settlements developed astride these transportation corridors. Trails, roads, and, later, railroad lines were the initial conduits for importing the foods and supplies necessary to survive in this harsh environment. Later, these same corridors carried food and mineral resources out of the area. Events and/or developments relating to transportation and communication include the California Gold Rush of 1849, overland mail service including the Pony Express/Egan Trail, the Nevada Northern Railway, and the Central Pacific Railroad.

Mining

Mining for gold, silver, and copper was probably the largest catalyst for settlement in this region. From Ely to the south, the following historic mining districts are in proximity to the project alignment: Cherry Creek Mining District, Robinson Mining District, Currant Mining District, the Silver King Mining District, Delamar District, and a cluster of mines in the general vicinity of Pioche, including, Ely Springs, Bristol, Highland, Pioche, and Comet districts.

Ranching and Farming

Ranching in the west was well-established in Nevada by the late 1870s. Cattlemen could obtain land through the 1862 Homestead Act, the Timber and Culture Act of 1873, and the Desert Land Act of 1877.

In response to overgrazing, the Taylor Grazing Act of 1934 was signed by President Roosevelt. This legislation was intended to “stop injury to the public lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvements, and development; and to stabilize the livestock industry dependent upon the public range” (Sayre 1999). Because it changed the way the government managed federal land, the Taylor Grazing Act of 1934 was probably the most significant federal legislation the West had seen to date.

3.10.3.4 Previous Research

Records searches of the project area, and areas surrounding it, were conducted at the Ely District Office of the Nevada BLM, the Harry Reid Center of Environmental Studies at the University of Nevada, Las Vegas (UNLV), and using data incorporated in the Nevada Cultural Resources Information System (NVCRIS). Results plotted on USGS topographic quadrangle base-maps covering the project area were reviewed to identify previously documented sites and cultural resource studies completed within 1 mile of project components. A supplemental review of the General Land Office (GLO) maps determined historical land ownership and locations of

potential historic-period sites within 3 miles of project components. This information is documented in the associated cultural resource reports (Young et al. 2007, Carpenter et al. 2008; Duke et al. 2009).

3.10.3.5 Cultural Resource Inventory Results

A Class III level inventory was conducted on certain components of the ON Line Project: Robinson Summit Substation, RSS-Site B sub-alternative, Falcon Substation Expansion area, Segment 9A, and sub-alternative Segment 10. The ON Line transmission line segments that are within the SWIP Utility Corridor were not inventoried since a 200-foot wide alignment within the SWIP Utility Corridor had recently been inventoried as part of a separate project (Crews et al. 2007) and provides information useful for assessing SWIP Utility Corridor-wide sensitivity. The findings from the project-specific inventories, combined with recent findings from the associated transmission line ROW in the SWIP Utility Corridor (Crews et al. 2007), provide sufficient information to analyze the ON Line Project's potential effect on cultural resources. Data from the project-specific and adjacent studies were incorporated into a sensitivity analysis as described below. As outlined in the Programmatic Agreement, all elements of the final design would be fully inventoried and Section 106 satisfied prior to any project related disturbance. Project components, or portions thereof, not included in field investigations, would be subject to a Class III inventory as project planning proceeds and prior to any ground disturbing activities in those locations.

No TCPs have been identified in the project area by previous studies.

Archaeological Sensitivity Analysis

An archaeological sensitivity assessment was derived from the current and relevant previous Class III level inventory results for the project area and adjacent lands (see keystone studies in Carpenter et al. 2008). Using site types and those sites determined or recommended eligible to the NRHP, density estimates for the number of acres of NRHP-eligible sites per square mile were made (Carpenter et al. 2008). Each of the various project components was then ranked according to its prehistoric and historic archaeological sensitivity. The sensitivity ranks are defined in **Table 3.10-1**. Overall, historic site counts and the number of NRHP-eligible historic period sites are low, precluding classification using the same methods developed for the prehistoric sites (Carpenter et al. 2008); therefore a simplified method was developed. Sensitivity rankings for historic sites takes into account both number of eligible sites and proximity to sensitive areas related to specific themes of transportation/communication, mining, and farming/ranching.

TABLE 3.10-1 ARCHAEOLOGICAL SENSITIVITY RANKING

SENSITIVITY RANK	DESCRIPTION
	PREHISTORIC ARCHAEOLOGY
Low	Less than 1 acre of NRHP-eligible sites per square mile
Moderate	1 to 7.5 acres of NRHP-eligible sites per square mile
High	7.5 to 15 acres of NRHP-eligible sites per square mile
Very High	15+ acres of NRHP-eligible sites per square mile
	HISTORIC ARCHAEOLOGY
Low	Few if any NRHP-eligible sites
High	Several NRHP-eligible sites and/or proximity to significant transportation corridors or historic mining districts

Nine general prehistoric site types were recognized based on artifact composition, site size, and the toolstone utilized. These include complex feature/artifact assemblage, simple/complex flaked stone, linear feature/assemblage, simple milling equipment, simple pottery assemblage, toolstone quarry, segregated reduction location, isolated thermal feature, and isolated artifact. Simple flaked stone scatters comprise 79 percent of prehistoric sites within the keystone studies (Carpenter et al. 2008).

The historic-period sites were generally classified into nine types and then associated with historical themes. The site types include charcoal feature/debris, residential features/debris, temporary occupation/debris, transportation feature/debris, trash scatter/debris, mining feature, ranching feature/debris, conservation feature, and isolated find. The historic themes include exploration, transportation, mining, farming/ranching and grazing, government and politics, and leisure and recreation. Most of the historic period sites (62 percent in keystone studies; Carpenter et al. 2008) are simple trash scatters that are difficult to link to any one historical theme. The next most common historic-period sites are transportation-related features.

Historic sensitivity determinations include proximity to significant transportation corridors or historic mining areas. There are a number of major travel corridors in the general area including the Lincoln Highway, the Midland Highway, and an old alignment of US-93.

3.10.4 Specific Project Area Conditions

The following descriptions of prehistoric and historic archaeological sites and sensitivities are taken from the project specific inventories and sensitivity modeling analysis discussed in **Section 3.10.3**. For areas not inventoried, sensitivity modeling was deemed appropriate at this stage of the planning process for providing the baseline data. See **Section 3.10.3** for information regarding the sensitivity analysis.

Proposed Action

The following table (**Table 3.10-2**) presents the sensitivity analysis data or the known site data by project component for the Proposed Action.

TABLE 3.10-2 POTENTIAL FOR CULTURAL RESOURCES FOR THE PROPOSED ACTION

PROJECT COMPONENT	PREHISTORIC ARCHAEOLOGICAL SENSITIVITY	HISTORIC ARCHAEOLOGICAL SENSITIVITY	KNOWN HISTORIC RESOURCES	INVENTORY RESULTS
Segment 6C	Very High	High	Midland Highway, the Currant Mining District, and ranching/farming	N/A
Segment 8	Low	Low		N/A
Segment 9A*	N/A	N/A		No sites
Segment 9B	Low	Low		N/A
Segment 9D	Very High	High	Historic Route of US-93	N/A
Segment 11	High	Low		N/A
Robinson Summit Substation* (including associated loop-in)	N/A	N/A		9 sites of which 2 recommended NRHP-eligible
Falcon Substation Expansion*	N/A	N/A		No sites

*This project component was inventoried (Young et al. 2007, Duke et al. 2009)

BLM review of the cultural resource inventory reports (Young et al. 2007, Carpenter et al. 2008, Duke et al. 2009, Gilreath et al. 2010) is on-going. Recommendations of eligibility will be reviewed by the BLM in each of the two field offices where the project is located. The BLM will make eligibility determinations, which will then be reviewed by the Nevada SHPO.

Action Alternative

The following table (**Table 3.10-3**) presents the sensitivity analysis data or the known site data by project component for the Action Alternative.

TABLE 3.10-3 POTENTIAL FOR CULTURAL RESOURCES FOR THE ACTION ALTERNATIVE

PROJECT COMPONENT	PREHISTORIC ARCHAEOLOGICAL SENSITIVITY	HISTORIC ARCHAEOLOGICAL SENSITIVITY	KNOWN HISTORIC RESOURCES	INVENTORY RESULTS
Segment 6C	Very High	High	Midland Highway, the Currant Mining District, and ranching/farming	N/A
Segment 8	Low	Low		N/A
Segment 9A* (sub-alternative)	N/A	N/A		No sites
Segment 9B	Low	Low		N/A
Segment 9C	Low	Low		N/A
Segment 9D	Very High	High	Historic Route of US-93	N/A
Segment 10* (sub-alternative)	N/A	N/A		35 sites of which 10 recommended NRHP-eligible
Segment 11	High	Low		N/A
Robinson Summit Substation*	N/A	N/A		9 sites of which 2 recommended NRHP-eligible
RSS-Site B, includes loop-ins and access roads (sub-alternative)*	N/A	N/A		11 sites of which 3 recommended NRHP-eligible
Falcon to Gonder Loop-in (sub-alternative)*	N/A	N/A		17 sites of which 0 recommended NRHP-eligible
Falcon Substation Expansion*	N/A	N/A		No sites

Sensitivity data source: Carpenter et al. 2008
*This project component was subject to inventory (Young et al. 2007, Duke et al. 2009, Gilreath et al. 2010)

3.11 Native American Concerns

Federal agencies are required by law (including the National Historic Preservation Act of 1966 and Archaeological Resources Protection Act of 1979) to consult with Native Americans on actions that may affect their traditions or uses of public lands. The agency must provide tribes a reasonable opportunity to identify its concerns about historic properties, advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance, articulate its views on the undertaking's effects on such properties, and participate in the resolution of adverse effects.

The goal is to "assure that tribal governments, Native American communities, and individuals whose interests might be affected have a sufficient opportunity for productive participation in BLM planning and resource management decision making." To this end, the BLM has engaged in consultation with the Native Americans associated with the area.

3.11.1 Area of Analysis

For the purposes of this analysis, the project area includes an approximately 10-mile-wide area centered on the components of the ON Line Project facilities.

3.11.2 Data Sources and Methods

Data regarding Native American Concerns relied on the BLM tribal liaison's knowledge of and familiarity with places and resources of Native American interest and concern within their district. Further, data was gathered and supplemented by reviewing available ethnographic and ethnohistoric reports produced for previous federal undertakings in the vicinity of the project area (Bengston 2007).

3.11.3 Existing Conditions

Data gathered during past consultation with tribal governments was summarized in a project specific report (Bengston 2007) which indicates there are at least 11 potential areas of cultural and/or geographical interest within the general vicinity of the proposed Robinson Summit Substation, RSS-Site B sub-alternative, and the transmission line alignments (Bengston 2007). Six of the areas involve subsistence activities. Four contain village or other habitation sites and one area has the potential for burial sites. There are two battle or massacre sites. Of particular importance are one place associated with traditional stories and five places associated with various ceremonial and ritual practices.

The Falcon Substation area was included in a previous study (BLM 2001a). No specific concerns are known for this area.

Indian trust resources are natural resources protected by a fiduciary obligation on the part of the United States. Indian trust resources located on Indian reservation lands are managed and protected by the tribes. Indian trust resources located on lands administered by the BLM are managed and protected by the BLM; no Indian trust resources have been identified on BLM-administered lands within the project area. However, four parcels of land were recently transferred to be held in trust for the Ely Shoshone Tribe for traditional, ceremonial, commercial, and residential purposes (BLM 2008c). These parcels are to the north and outside of the project area.

Cultural resource sites are manifestations of past human activities. Prehistoric and ethnographic overviews are provided in **Section 3.10** (Cultural Resources), as are the known cultural resource sites in the project area. The prehistoric and historic sites indicate continuous use of the area for thousands of years by various groups.

Table 3.11-1 summarizes the known places of potential cultural and/or geographic interest to the Tribes (Bengston 2007) located within or near the components of the project.

TABLE 3.11-1 KNOWN NATIVE AMERICAN PLACES OF INTEREST IN PROXIMITY TO THE ON LINE PROJECT

ELECTRICAL TRANSMISSION COMPONENT	KNOWN PLACES OF INTEREST*	OTHER DATA
Segment 6C	1	One place appears to be within alignment. An additional five known sites are located possibly near or adjacent to this segment
Segment 8	0	
Segment 9A	●	Black Canyon Petroglyphs (Rock Art) nearby
Segment 9B	1	One place appears to be located within alignment
Segment 9C (alternative)	0	
Segment 9D	2	One place adjacent or within alignment, another (Black Canyon Petroglyphs) to the west
Segment 10 sub-alternative	1	One place located near alignment to the east
Segment 11	1	One place to the west of alignment
Robinson Summit Substation	0	
RSS-Site B sub-Alternative	1	One place located about 5 miles to the west
Falcon Substation	0	

*Exact locations of places of interest may not be known, therefore this information is approximate.

3.12 Land Use and Realty

3.12.1 Area of Analysis

Land use issues and impacts are best understood when related to the larger sociopolitical setting that provides needed context to determine impact significance. Therefore, for purposes of analysis, land use, ownership, and access are examined at the county level and within BLM District Offices.

3.12.2 Data Sources and Methods

Land use information, policies, and current management practices were gleaned from public sources, specifically from BLM resource management plans (RMPs) for the Ely and Southern Nevada Districts and from county land use plans. Land use authorizations and land tenure information were gathered from BLM RMPs as well as current data contained within BLM's Legacy Rehost 2000 System (LR2000) that provides reports on BLM land and mineral use authorizations for oil, gas, and geothermal leasing, ROWs, mineral development, land and mineral title, mining claims, withdrawals, classifications, and federal mineral estate information. These data were used to characterize land use within and surrounding the project area for the purpose of determining potential changes in public and private land use and ownership, BLM land use authorizations, and land disposals.

3.12.3 Existing Conditions

The northern terminus of the proposed transmission line would be at the Robinson Summit Substation northwest of Ely in White Pine County, extending south through Nye, Lincoln, and Clark counties with a southern terminus at the Harry Allen Substation located northeast of Las Vegas. The Falcon Substation expansion would be in Eureka County on private land – approximately 4 acres on NV Energy-owned land and approximately 3 acres on adjacent private land. Therefore, project components would be subject to the various county land use plans and

ordinances. Further, project components cross private, state, and federal lands. The federal lands involved are almost entirely public lands administered by the BLM; project components would be subject to the appropriate district office RMP. This section will discuss four major components of land use:

- Current land use plans and policies
- Land use and ownership
- Land use authorizations
- Land tenure program

The first two will be discussed in general terms as they apply to the project area as a whole. The remaining two land use components will be discussed as they relate to specific project elements.

3.12.3.1 Land Use Plans and Policies

BLM Land Use Plans
Ely RMP

The Ely District Record of Decision and approved Resource Management Plan was signed August 20, 2008. The planning area encompasses a total of 13.9 million acres within the planning area boundary, of which the BLM administers approximately 11.5 million acres in Lincoln, White Pine, and portions of Nye counties in Nevada. The RMP provides programmatic and implementable direction for management of BLM administered public lands within the Ely RMP planning area. The RMP provides direction in resource management activities including leasing minerals such as oil and gas; construction of electrical transmission lines, pipelines, and roads; grazing management; recreation and outfitting; preserving and restoring wildlife habitat; selling or exchanging lands for the benefit of local communities; military use of the planning area; and conducting other activities that require land use planning decisions.

Las Vegas RMP

The Las Vegas RMP (BLM 1998a) establishes land use objectives and management actions for 3.3 million acres of BLM administered land in Clark and Nye counties, Nevada. The Southern Nevada District Office administers approximately 67 percent of Clark County and 6 percent of Nye County. The RMP acknowledges the interconnection of the Harry Allen Substation to a proposed 500 kV line within the SWIP Utility Corridor (BLM 1998a).

County Land Use Plans
Eureka County

The Eureka County Master Plan (Eureka County 2000) describes land use and planning for the County. The Land Use and Public Lands element of the General Plan was last updated in 1998, and formally adopted into the Eureka County Master Plan in June 2000 (Eureka County 2000). The General Plan recognizes six basic types of land use categories in Eureka County: Urbanized Areas; Permanent Open Space; Open Space and Appropriate Associated Uses; Agriculture Only, Associated Housing; Agriculture, Mining, Limited Housing; and Agriculture, Mining, Very Limited Housing. The proposed Falcon Substation expansion within Eureka County is located in the land use category Agriculture, Mining, Very Limited Housing. Eureka County has no adopted zoning ordinance.

Land use within Eureka County is comprised mainly of mining and agriculture. The greatest land use in the county is agricultural open space, comprised of designated grazing allotments.

Approximately 2.4 million acres (90 percent of lands) are used for cattle and sheep grazing and pasture, as well as for crops such as hay or barley. Mining districts represent the next largest land use designation in the county. The majority of Eureka County is sparsely populated, and most of the residential development is associated with agriculture and ranching. The majority of lands within the county boundary fall under the management authority of the BLM and the US Forest Service. The County of Eureka manages primarily privately owned land in and around the Town of Eureka, as well as a checkerboard pattern of private land in the northern portion of the county.

One of the largest tracts of privately owned land in the county is located in Boulder Valley (the location of the Falcon Substation), north of Interstate 80. Eureka County has four principal towns: Eureka, Diamond Valley, Crescent Valley, and Beowawe. The Town of Eureka is the largest; it has a population of approximately 1,800 and is the County Seat.

White Pine County

The White Pine County Land Use Plan describes land use issues in the County, as well as in the specific planning areas of Ely, Baker, Lund, McGill, Preston, Ruth, and the Ely-McGill corridor. The plan also provides a number of land use goals and implementation strategies; however, it contains no goals or strategies related specifically to utilities or utility corridors, other than a provision for the efficient use of community infrastructure. Further, the County established utility corridors for industrial development, transmission, and renewable energy development that encompass the SWIP Utility Corridor. White Pine County has 11 general land use designations. Most land outside of established communities is designated as open range or federal reserve. The proposed project area lies predominantly within these two land use designations (White Pine County 2008).

The White Pine County Public Land Use Plan provides a coordinated land use planning effort among the County, BLM, and Forest Service and is included as an appendix to the White Pine County Land Use Plan. In general, the public land policies encourage mineral exploration, opportunities for livestock grazing, and other agricultural uses; encourage dispersed recreational opportunities; and support a diversity of wildlife species and habitats. Related to access and transportation, the plan encourages route locations for transportation, utilities, and communication corridors to be planned in harmony with other resources on public lands (White Pine County 2008).

Nye County

The Nye County Comprehensive Plan (1994) acknowledges that it is the third largest county in the continental U.S. in terms of land area (approximately 11.5 million acres). Of this, 7 percent is private land. The County has adopted the Uniform Building Code, but does not have a zoning ordinance. The County's far-flung communities are very diverse and the County encourages them to develop specific area plans that suit their individual needs for growth and development. Outside of Pahrump, no regional land use plans were found (Nye County 1994).

Lincoln County

There are 11 land use designations shown on the land use map for Lincoln County. The residential land use designation is divided into rural, low, medium, and high-density developments. Rural and lower density development areas are those that should be located away from public utilities. The plan encourages new industrial development along the highway and railway corridors in the county where possible. The plan also favors the disposition of federal lands into private ownership (Lincoln County 2006).

Clark County

The land use component of the Clark County Comprehensive Plan breaks the county into planning areas. The Northeast Planning Area pertains directly to the project elements that would occur within the county. The Northeast Planning Area has the most acres within the county dedicated to office and industrial land uses (10,166 acres), and contains the most open space (7,284 acres) (Clark County 2007a).

3.12.3.2 Land Use and Ownership

Land Use
Within the project area there are agricultural and range lands, sage scrub and grasslands, forested mountains, and desert valleys. Existing land uses include farms and ranches, rural residences, grazing allotments, range improvements, mines/mining claims, energy and communication facilities, transportation systems, developed recreation areas, and dispersed recreation areas.

The dominant land use is livestock grazing/ranching. The majority of public lands in Nevada are managed by the BLM for range uses. Associated range improvements include fences, wells, water tanks, corrals, and windmills. The BLM has divided range lands in the region into grazing allotments to facilitate the management of the land for public livestock grazing (see **Section 3.10**). Much of the private and state lands are also open range.

Agricultural lands in Nevada are sparse and dispersed, typically located near perennial streams and rivers. There are no prime farmlands within the project area (see **Section 3.5.3.2**).

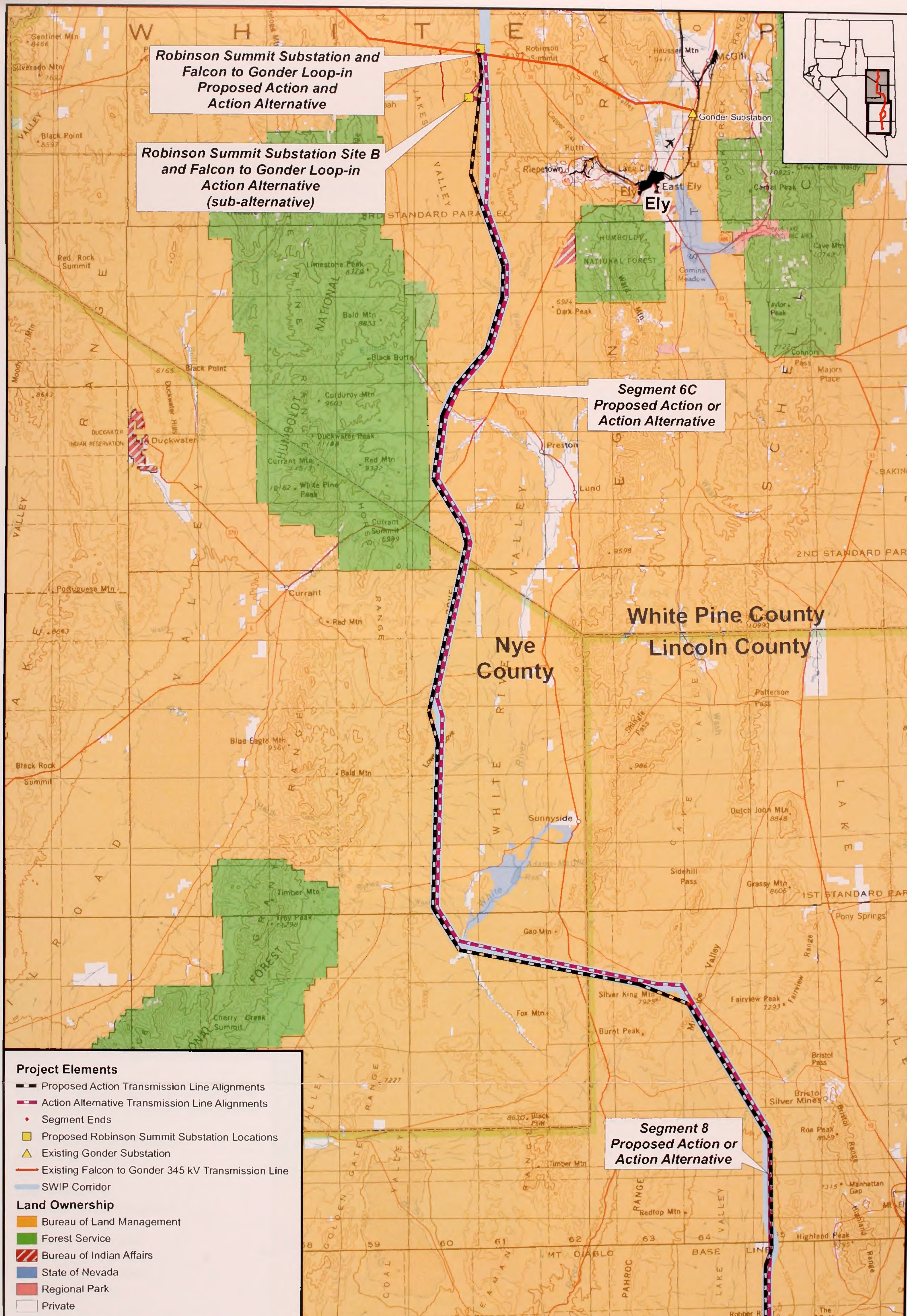
Mining is an important land use in Nevada. There are numerous mining claims in the vicinity of the project (see **Section 3.3**). The Robinson Project, formerly the Kennecott copper mine, is a large, active mine west of Ely.

Land Ownership
White Pine County is bordered on the east by Utah and by Eureka and Nye counties on the west and southwest. Nye County is bordered by Lander, Eureka, White Pine, Lincoln, and Clark counties to the north and east; and bordered by Churchill, Mineral, and Esmeralda counties, and California to the west. Lincoln County is bordered on the east by Utah and Arizona, on the west by Nye County, and on the south by Clark County. Clark County is located in the southern portion of Nevada, and is bordered by Lincoln County to the north, Utah and Arizona on the east, and Nye County and California to the west. The federal government is a significant landowner in each of the counties (**Table 3.12-1**). Lincoln, Nye, and White Pine counties are over 90 percent federal land (see **Figures 3.12-1a** and **3.12-1b**).

TABLE 3.12-1 LANDOWNERS AND ACRES BY COUNTY

DESCRIPTION	EUREKA	WHITE PINE	NYE	LINCOLN	CLARK
Total Acres	2,676,480	5,699,000	11,560,960	6,816,000	5,173,760
Federal	79.5%	93.5%	92.7%	98.3%	89.1%
Tribal	0.0%	1.2%	0.1%	0.0%	1.5%
State	0.2%	0.2%	0.2%	0.3%	1.2%
Local/Private	20.3%	5.1%	7.1%	1.4%	8.1%

Source: University of Nevada Cooperative Extension, Public Lands in the State of Nevada: An Overview 2007



Source - Land Status: Bureau of Land Management
Base Map: USGS topographic map of Nevada (scanned from paper copy and georeferenced by R. Hess, University of Nevada Reno).

1:500,000

10 0 10 Miles

10,000 0 10,000 Meters

Scale is 1:500,000 when printed at 11"x17"

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FIGURE 3.12-1a
LAND OWNERSHIP
ON LINE PROJECT

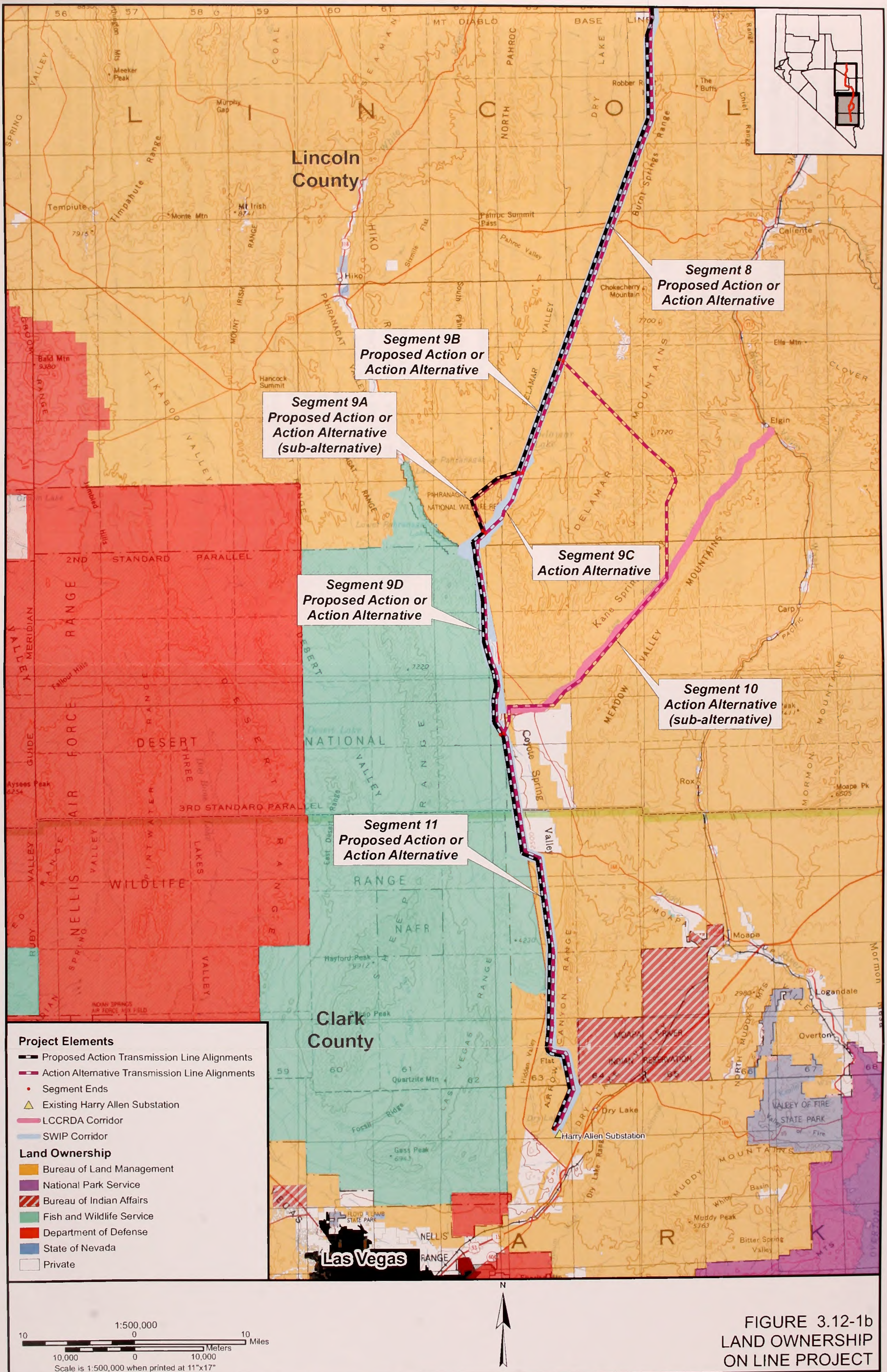


FIGURE 3.12-1b
LAND OWNERSHIP
ON LINE PROJECT

Eureka has the highest percentage of privately owned land of the five counties. White Pine County contains 17.9 percent of the area of the five counties, and 93.5 percent of the land in White Pine County is controlled by the federal government.

3.12.4 Specific Project Area Conditions

BLM Land Use Authorizations

The FAA manages the airspace in the vicinity of all registered air facilities (e.g., airports, registered air strips) to control potential obstructions to aircraft operations. The BLM provides FAA the opportunity to provide input on BLM authorizations on public lands in order to identify potential conflicts with airspace management (43 CFR 2804.25(d)(4)).

The Energy Policy Act of 2005 directed the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate corridors for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on Federal land in the 11 contiguous Western States, and perform necessary environmental reviews. The PEIS, Designation of Energy Corridors on Federal Land in 11 Western States (West-wide Energy Corridor or WWEC), was completed in November 2008, and the Interior Department issued a Record of Decision (ROD) in January 2009 that amended 92 BLM land use plans and established approximately 5,000 miles of energy corridors. The corridors assist in minimizing adverse impacts and the proliferation of separate ROWs (BLM 2009a).

There are several federally designated utility corridors (SWIP Utility Corridor, WWEC, Falcon-Gonder) within the project area with electric transmission lines specifically authorized including the GBT line and the Falcon-Gonder 345 kV transmission line.

The ROD for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States (aka the WWEC) amends both the Ely and Las Vegas RMPs to incorporate the designated corridors (BLM 2009a).

The SWIP Utility Corridor varies in width from 2,640 to 3,500 feet wide, and runs from Idaho south to the Harry Allen Substation in Clark County, Nevada. Within the SWIP Utility Corridor, the 500 kV GBT Transmission line, was authorized by the BLM (BLM 1994, 2007d). The Falcon-Gonder transmission line is a 180-mile long 345 kV line connecting the Falcon Substation north of Dunphy, Nevada with the Gonder Substation north of Ely. This ROW is currently 160 feet wide. This is within the 2,640-foot wide Falcon-Gonder Corridor (BLM 2008a). There is also a parallel 230 kV line from the Gonder Substation 67 miles west to the Machacek Substation near Eureka, Nevada within this corridor. West of Eureka the 230 kV line continues another 184 miles separated from the 345 kV line to a NV Energy electric power plant located near Yerington, Nevada. Additional transmission lines include two 230 kV lines that extend east from the Gonder Substation towards Utah traversing the eastern edge of Steptoe Valley and the Schell Creek Range.

Land use authorizations in the vicinity of the proposed ON Line Project include various leases and ROWs in the Ely and Southern Nevada Districts.

Land Tenure

There are no public lands on the Ely District identified for current disposal that are in the vicinity of the ON Line Project. There are some lands that were transferred to the USFWS as a part of the Lincoln County Conservation, Recreation and Development Act of 2004. These lands were located just north of the Desert National Wildlife Refuge. In addition, USFWS land along the west side of US-93 at Coyote Springs was transferred to BLM and is part of the designated BLM West-wide Utility Corridor.

3.13 Special Designations

This section describes specially designated resources located within 50 miles of ON Line Project elements. These include Wilderness Areas, Wilderness Study Areas, Areas of Critical Environmental Concern, Research Natural Areas, various units of the National Park Service (NPS), Nevada Department of Wildlife (NDOW) Management Areas, and National Wildlife Refuges. Lands outside of BLM jurisdiction were identified and included in the analysis because recognized natural resources are present on these lands, and project elements in place during construction or operation of the ON Line Project could indirectly impact a variety of resources present in these Special Designation Areas (SDAs). Included are lands administered by the NPS, U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), and NDOW Conservation lands. Other Nevada state lands, such as state parks, were not included: these are covered under Recreation Resources.

Nationally, there are several federal designations that are used to protect wildlands, wildlife, and unique natural features. Those designations found within 50 miles of the ON Line project include the following:

Wilderness Areas *(WAs)* are designated by Congress under the authority of The Wilderness Act of 1964 (P.L. 88-577; 16 USC 1131-1136) and comprise the National Wilderness Preservation System. Wilderness is defined as an area where "....the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Wilderness designation is meant to ensure that the land is preserved and protected in its natural condition (BLM Undated. a). There are 21 WAs managed by either the Ely or Southern Nevada BLM District Offices, and 10 WAs managed by the Humboldt-Toiyabe National Forest within 50 miles of the proposed ON Line Project (BLM Undated. b).

Wilderness Study Areas (WSAs) are areas that have been inventoried for Wilderness designation as described in the Federal Land Policy and Management Act (FLPMA), but Congress has not yet considered them for designation. These areas are managed to retain their wilderness attributes until Congress determines whether or not they should be designated (BLM 2006; BLM Undated. a). There are 4 WSAs in the two BLM District Offices that are within 50 miles of the proposed ON Line Project (BLM Undated. c).

Areas of Critical Environmental Concern (ACECs) are the principal BLM designation for public lands where special management is required to protect important natural, cultural, and scenic resources, or to identify natural hazards (BLM 2007c p.G2, BLM Undated. a). There are 12 ACECs within 50 miles of the proposed ON Line Project. These are designated to protect fragile desert flora and fauna such as the desert tortoise, a federally listed threatened species.

Research Natural Areas (RNAs) are federal agency-designated areas protected and maintained in natural conditions for the purpose of conserving biological diversity, conducting environmental research, and fostering education. The system was established in 1927. Several federal land management agencies oversee RNAs. The USFS manages the 5 RNAs identified in this FEIS (BLM Undated. a).

National Parks, Monuments, and Recreation Areas are managed by the NPS, which was formed by President Woodrow Wilson with the 1916 National Park Service Organic Act. National Parks and other lands held by the NPS are managed to "preserve unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations." The NPS cooperates with partners to

conduct research, support recreation and education, and extend the benefits of natural and cultural resources within NPS lands to people in the U.S. and the world.

Within 50 miles of the ON Line Project there is one National Park (Great Basin), one National Recreation Area (Lake Mead), and two National Historic Trails (Pony Express National Historic Trail and Old Spanish National Historic Trail, listed below) (NPS 2007a, b; NPS 2009a, b).

National Historic Trails commemorate historic routes, such as the Pony Express and California Trails, and promotes their preservation, interpretation, and appreciation. The National Trails System Act (Public Law 90-543) was passed by Congress in 1968. The Pony Express National Historic Trail was established in 1992 and follows the 1,622 mile Pony Express route, which passes through the Schell Creek and Cherry Creek Ranges and Steptoe Valley as it crosses Central Nevada, north of the ON Line Project (NPS 2007b; BLM 2007c; and BLM Undated. a). The Old Spanish National Historic Trail was established in 2002 and follows the historic trade route between Santa Fe and Los Angeles, which passes through the Las Vegas Valley, south of the Interstate 15 corridor, about 5 miles south of the ON Line Project.

National Wildlife Refuges (NWR) are lands owned by the federal government and managed by the USFWS to conserve, protect, and enhance the nation's fish and wildlife and their habitats for continuing benefit of people (USFWS 2007c). The Desert National Wildlife Refuge (DNWR), and Pahranagat NWR are adjacent to the proposed ON Line Project. The Moapa Valley NWR is within ten miles of the project alignments. These three refuges are near the south terminus of the ON Line Project.

Further, BLM manages lands identified as having wilderness characteristics to protect those characteristics through a variety of other land use plan decisions such as establishing visual resource management class objectives to preserve the existing landscape; attaching conditions to permits, leases, and other authorizations; and establishing limited or closed off-highway vehicle designations. Other special designations, as described above, are not a substitute for wilderness designation but provide specific management prescriptions to protect important resources. All lands in the Study Area with identified wilderness characteristics are designated wilderness or are managed under some other special designation that protects the wilderness characteristics (BLM 1998a, 2008a).

The State of Nevada also protects wildlife, wildlands, and plants. The NDOW maintains several *Wildlife Management Areas* (WMAs), which are State owned or leased lands that are managed to protect wetlands and waterfowl. The public can use these areas as public hunting grounds for migratory game birds, upland game birds, furbearers, and big game (NDOW 2005). The Kirch Wildlife Management Area is adjacent to the ON Line Project along Segment 6C, and Railroad Valley and Steptoe Valley WMAs are within 50 miles of the ON Line Project.

3.13.1 Area of Analysis

The area of analysis includes all special designation resources that would be directly affected by, or would be within, a 50-mile radius of the Proposed Action and Action Alternative discussed in Chapter 2. For each Special Designation Area (SDA), the approximate distance and general direction of the SDA from project elements is noted in **Table 3.13-1**.

3.13.2 Data Sources and Methods

The following indicators were considered when describing the affected environment for special designations:

- Acres of disturbance (temporary and permanent)
- Change in quality of primitive wilderness experience relative to outside influences

3.13.3 Existing Conditions

Seven SDAs are within or immediately adjacent to one or more of the components of the proposed ON Line Project. Many more are within 50 miles of either side of the proposed project alignment and/or the Robinson Summit Substation. SDAs surrounding the Falcon Substation were not evaluated because the proposed expansion would occur to an existing substation on private land. The area of analysis includes 31 WAs, 4 WSAs, 12 ACECs, 7 federal or state wildlife areas, 5 RNAs, 1 National Park, 1 National Recreation Area, and 1 National Historic Trail. These SDAs are listed in **Table 3.13-1** in alphabetical order. Each SDA is also discussed in the text below the table. The first group discusses the 7 SDAs that fall within or adjacent to the ON Line Project. The second group discusses SDAs that are within 50 miles of the ON Line Project. All are listed in alphabetical order. **Figure 3.13-1** shows the locations of these SDAs relative to project elements.

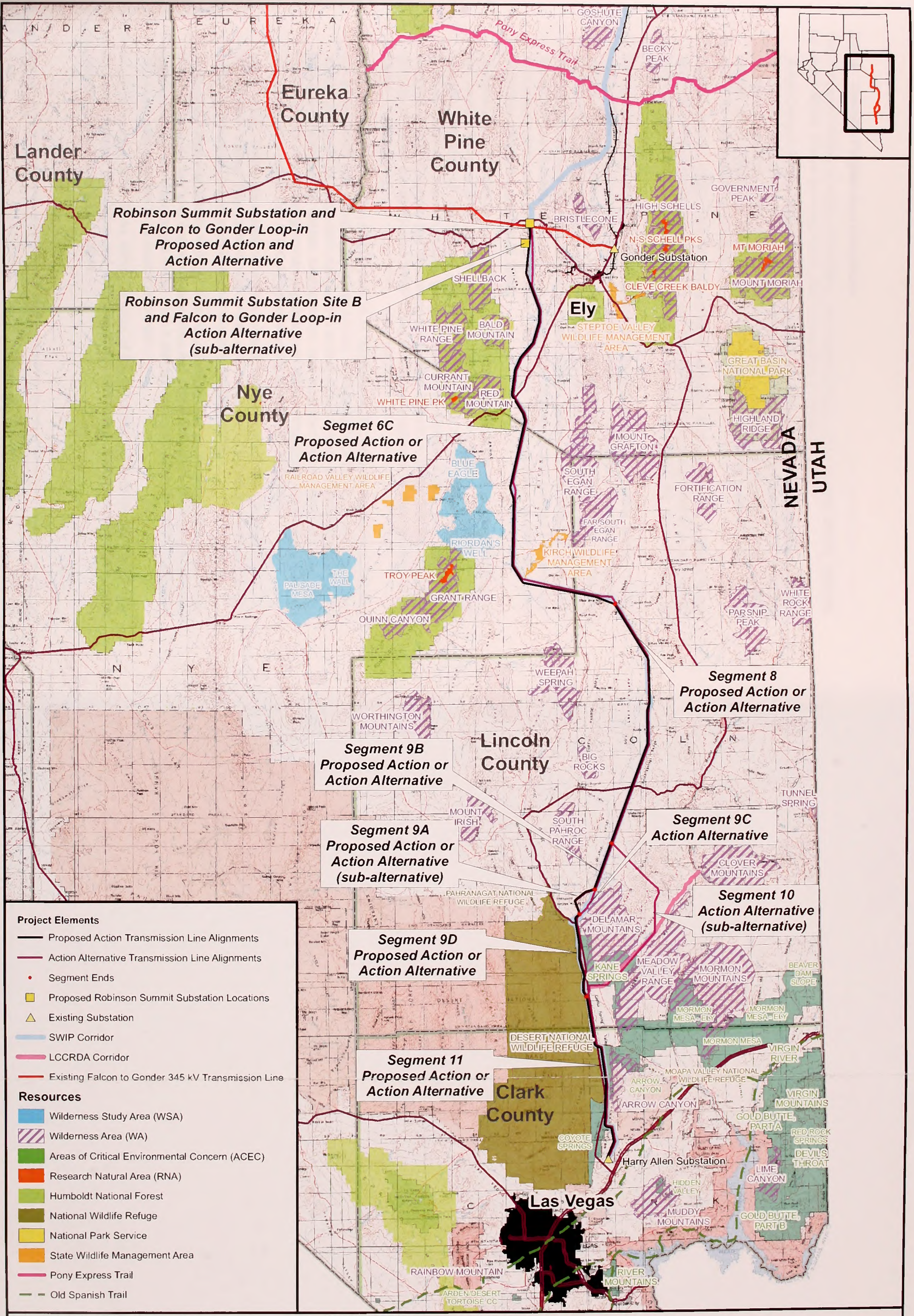
TABLE 3.13-1 SPECIAL DESIGNATIONS AREAS GROUPED ALPHABETICALLY

SPECIAL DESIGNATION AREA ^	SIZE OF AREA IN ACRES	GEOGRAPHIC LOCATION OF AREA	APPROXIMATE LINEAR DISTANCE FROM THE ON LINE PROJECT COMPONENT
Arrow Canyon ACEC	1,977	Due E of Desert NWR	Adjoins Segment 11 for 10 miles
Arrow Canyon WA	27,530	2 miles E of Desert NWR and surrounded on W, N, and E sides by Mormon Mesa/Arrow Canyon ACEC	2 miles E of Segment 11
Bald Mountain WA	22,366	E side of White Pine Mts.	5.5 miles W of Segment 6C
Beaver Dam Slope ACEC	36,900	E of Desert NWR: Runs E of Mormon Mesa ACEC to Utah border	40 miles E. of Segment 11
Big Rocks WA	12,997	North Pahroc Range, N of US-93 and Pahroc Summit	10 miles W of Segment 8
Blue Eagle WSA	14,300	N ½ Grant Range, W side, S of US Rte. 6	6 miles W of Segment 6C
Bristlecone WA	14,095	N end Egan Range, by Heusser Mt., just W of McGill	9.5 miles NE of Robinson Summit Substation and 13.5 miles NE of RSS-Site B sub-alt
Cleve Creek Baldy RNA	333	Within High Schells WA	25 miles E of Robinson Summit Substation and RSS-Site B sub-alt
Clover Mountains WA	85,748	12 miles S of Caliente, NV	10 miles E of Segment 10 (sub-alt)
Coyote Springs ACEC	75,000	E of the SE corner of DNWR	Segment 11 passes through ACEC for 18 miles
Currant Mountain WA	47,357	SW side Currant, or White Pine, Mts.	8 miles W of Segment 6C
Delamar Mountains WA	11,328	E of the NE corner of DNWR	Segment 9C and 9D occur adjacent to this WA Segment 10 (sub-alt) passes to E of WA by 1 mile
Desert National Wildlife Refuge (DNWR)	1.6 million	N of Las Vegas, W of US-93	Segment 9D is immediately east of the DNWR boundary for approximately 20 miles Approximately 2/3 of eastern border of DNWR is adjacent to or within 5 miles of Segment 11

SPECIAL DESIGNATION AREA ^	SIZE OF AREA IN ACRES	GEOGRAPHIC LOCATION OF AREA	APPROXIMATE LINEAR DISTANCE FROM THE ON LINE PROJECT COMPONENT
Far South Egans WA	36,384	Southern tip Egan Range	10 miles N of Segment 8
Fortification Range WA	30,656	S of Gt. Basin NP, between US-93 and County Rd 47	45 miles east of Segment 6C
Gold Butte A & B ACECs (2 units)	1,480	On Utah border east of the S end of the ETF	35 miles E of Segment 11
Goshute Canyon WA	42,544	Cherry Creek Range	43 miles NNE of Robinson Summit Substation and 47 miles NNE of RSS-Site B sub-alt
Grant Range WA	52,600	S½ Grant Range, S of Riordan's Well WSA, S of US-6	10 miles WSW of Segment 6C
Great Basin National Park	77,100	W of Baker, NV, and S of Mt. Moriah WA	48 miles E of 6C
Hidden Valley ACEC	3,520	At N end of Muddy Mts. WA	11 miles SE of terminus at Harry Allen Substation
Highland Ridge WA	68,627	Adjacent to S end of Great Basin NP	43 miles E of Segment 6C
High Schells WA	121,497	E of McGill and Ely	25 miles E of Robinson Summit Substation and RSS-Site B sub-alt
Kane Springs ACEC	65,900	E of DNWR, S of Delamar Mt. WA	Segment 9D passes through NW finger of ACEC for 7 miles Segment 10 sub-alt passes through main Kane Springs Valley for 13 miles US-93 and Segment 9D follow a similar alignment within NW finger of ACEC.
Kirch WMA	14,815	White River Valley, E of Grant Range	Segment 6C is adjacent to south end of WMA for approx. 1,320 feet Most of WMA is N of this contact point.
Lake Mead NRA	1.5 million	Lake Mead	50 miles from terminus at Harry Allen Substation
Lime Canyon WA	23,233	Adjoining Lake Mead NRA	50 miles from terminus at Harry Allen Substation
Little Humboldt River WSA	29,775	N of Midas	40 miles N of Falcon Substation
Meadow Valley Range WA	123,488	E of DNWR in Meadow Valley Mts.	0.5 miles SE of Segment 10 sub-alt; 6 miles E of Segment 11
Moapa Valley NWR	106	3 miles due N of Moapa Indian Reservation	10 miles E of Segment 11
Mormon Mesa ACEC	150,734	E of Desert NWR	1 mile E of Segment 11
Mormon Mts. WA	157,938	East of Meadow Valley Range WA	10 miles ESE of Segment 10 sub-alt
Mt. Moriah RNA	876 acres	In Moriah WA, N of Great Basin National Park	43 miles E of Robinson Summit Substation and RSS-Site B sub-alt
Mt. Grafton WA	78,743	Schell Ck Range W of Geyser Ranch	40 miles E of Segment 6C
Mt Irish WA	28,334	S of Worthington	Approximately 10 miles west of Segment 9A
Mt. Moriah WA	89,790	N end of Snake Range that includes Great Basin NP	38 miles E of Robinson Summit Substation and RSS-Site B sub-alt
Muddy Mountains WA	48,019	Muddy Mts. East of Las Vegas	10 miles SE of terminus at Harry Allen Substation, 10 miles E of Las Vegas
North-South Schells RNA	3,100	In Schell Creek Range, 19 miles NE of Ely	25 miles E of Robinson Summit Substation and RSS-Site B sub-alt
Old Spanish NHT	1,200 miles	S of I-15 corridor in Las Vegas	Approximately 5 miles S of Harry Allen Substation
Pahranagat NWR	~ 5,380	About 22 miles S of Hiko, on N end of DNWR	Approximately 1,000 feet from Segment 9D at the S end of the refuge

SPECIAL DESIGNATION AREA ^	SIZE OF AREA IN ACRES	GEOGRAPHIC LOCATION OF AREA	APPROXIMATE LINEAR DISTANCE FROM THE ON LINE PROJECT COMPONENT
Palisade Mesa WSA	99,500	S end Pancake Range	48 miles W of Segment 6C
Parsnip Peak WA	43,693	Wilson Ck Mountains	25 miles E of Segment 8
Pony Express NHT	1,622 miles	E of Schellbourne Pass, 22 miles N of McGill	Approximately 30 miles N of Robinson Summit Substation and 34 miles N of RSS-Site B sub-alt
Quinn Canyon WA	26,310	SW side of Grant Mts.	4 miles SW of Segment 10 sub-alt
Railroad Valley WMA	14,720	W of Bald Eagle WSA, E of Rte 6	16 miles W of Segment 6C
Red Mountain WA	20,490	SE side of White Pine Mountains	2 miles W of Segment 6C
Red Rock Springs & Devil's Throat ACECs (2 units)	1,483	On Utah border east of the S end of the transmission facilities	45 miles E of Segment 11
Riordan's Well WSA	36,200	N ½ Grant Range, E. side, S. of US 6	1.5 miles W of Segment 6C
Ruby Lake NWR	39,926	Just E of Ruby Mts.	The southern tip is 45 miles NW of Robinson Summit Substation and 49 miles NW of RSS-Site B sub-alt
Shellback WA	36,143	NE side of White Pine Mts.	8 miles W of Segment 6C
South Egan Range WA	67,214	Mid-South portion Egan Range	8.5 miles E of Segment 6C
South Pahroc Range WA	25,800	South Pahroc Range S of US-93 and Pahroc Summit	4.5 miles W of Segment 9B and 5 miles N of Segment 9A
Steptoe Valley WMA	6,426	3 miles south of Ely	20 miles E of Segment 6C
The Wall WSA	38,000	S end Pancake Range & Railroad Valley	40 miles W of Segment 8
Troy Peak RNA	2500	In Grant Range WA about 30 miles S of the town of Currant.	12 miles W of Segment 6C
Tunnel Springs WA	5,371	On Utah-Nevada border south of RR	35 miles E of Segment 9B
Virgin Mts. ACEC	35,830	On Utah border east of the S end of the ETF	42 miles E of Segment 11, adjoining Gold Butte ACECs
Virgin River ACEC	7,413	S of I-15, W of Utah border, on Virgin River	45 miles E of Segment 11, N of Virgin Mts. ACEC
Weepah Spring WA	51,480	Seaman Range, Timber Mt. and surrounding area	11 miles S of Segment 6C and 14 miles W of Segment 8
White Pine Peak RNA	787	9 miles N of town of Currant, 41 miles SW of Ely. Within the Currant Mountain Wilderness	11 miles W of Segment 6C of near where Rte. 6 crosses the White Pine Mountains
White Pine Range WA	40,013	W side of Currant, or White Pine, Mts.	12 miles W of Segment 6C
White Rock Range WA	24,413	E of Wilson Ck Range on Utah border in NE Lincoln County	35 miles W of Segment 8
Worthington WA	30,664	S of Grant Mts., W of Garden Valley	48 miles W of Segment 9B

^ The following abbreviations are used:
ACEC – Area of Critical Environmental Concern
WSA = Wilderness Study Area
WA = Designated Wilderness Area
WMA = Wildlife Management Area
NHT = National Historic Trail
NRA = National Recreation Area
NWR = National Wildlife Refuge
RNA = Research Natural Area



Source - ACEC, WA, WSA: Bureau of Land Management
WA AND RMA: U.S. Forest Service
Base Map: USGS topographic map of Nevada (scanned from paper copy and georeferenced by R. Hess, University of Nevada Reno).

Old Spanish Trail from National Park Service, National Trails Intermountain Region

1:1,250,000

10 0 40 Miles

10,000 0 50,000 Meters

Scale is 1:1,250,000 when printed at 11"x17"

FIGURE 3.13-1
ACEC, WA, WSA, AND RNA MAP
ON LINE PROJECT

3.13.4 Specific Project Area Conditions

The Proposed Action or Action Alternative would pass through, or be located directly adjacent to, seven SDAs. These are listed below and summarized in **Table 3.13-1**.

Arrow Canyon ACEC: This BLM area protects desert tortoise habitat and abundant rock art. It is located east of Arrow Canyon wilderness area and west of the Desert NWR. It adjoins Mormon Mesa and Coyote Springs ACECs to create a complex of protected desert tortoise habitat areas (Ludington 2004). Segment 11 passes through the western edge of this ACEC for approximately 10 miles.

Coyote Springs ACEC: This 75,000-acre BLM managed ACEC is located adjacent to the southeast side of the Desert NWR. It is part of a series of land designated to protect desert tortoise (Ludington 2004). Segment 11 passes through this ACEC for approximately 18 miles.

Delamar Mountains WA: This BLM wilderness area was designated in 2004 and is 111,328 acres in size. It is located in the Delamar Mountains just northeast of the Desert National Wildlife Refuge. Approximately 1.75 miles of Segments 9B and 9C within the designated SWIP Utility Corridor are proposed to run along the western border of this wilderness area. The wilderness area provides habitat to desert bighorn sheep, raptors, and the threatened desert tortoise. Sensitive species such as the white bearpoppy and banded Gila monster, and cultural resources including rock art, milling sites, and an obsidian quarry, are found within this wilderness area (BLM 2004).

Desert National Wildlife Refuge: This refuge, created in 1936, is the largest wildlife refuge in the lower 48 states and encompasses 1.6 million acres of Mojave Desert in southern Nevada, just north of Las Vegas. This NWR is part of the larger Desert National Wildlife Refuge Complex, which includes the Ash Meadows, Moapa Valley, and Pahranagat National Wildlife Refuges, and the Amargosa Pupfish Station (USFWS 2007d). Segments 9D and 11 within the designated SWIP Utility Corridor are adjacent to the east edge of the NWR.

Kane Springs ACEC: This 65,900-acre BLM managed ACEC adjoins the northeast side of the Desert NWR and includes the lower portion of Kane Springs Wash. It was designated as part of a group of public land designed to protect desert tortoise habitat and other wildlife that are threatened by habitat fragmentation and increased recreational use, especially OHV use, due to increasing human populations in surrounding areas. Segments 9D and 10 pass through or adjoin this ACEC for approximately 22 miles (BLM 2008a).

Kirch WMA: This state-managed wildlife area is located east of the Grant Range in the White River Valley. The southern end of this riverine series of ponds and wetlands would adjoin Segment 6C for approximately 1/3 of a mile (NDOW 2005).

Pahranagat National Wildlife Refuge: This refuge adjoins the northeast corner of the Desert NWR. It protects fish and waterfowl resources that utilize the White River where the river passes through the Pahranagat Valley. It is 5,380 acres in size (USFWS 2007e). Segment 9D would pass adjacent to its southeast border.

There are numerous other SDAs within 50 miles of the proposed transmission facilities and/or the Robinson Summit Substation and RSS-Site B sub-alternative. These are described below and summarized in **Table 3.13-1** above.

Arrow Canyon WA: This 27,530 acre BLM wilderness was designated in 2002. It is located east of US-93, just north of the Moapa Indian Reservation and is dominated by Arrow Canyon (Wilderness.net 2007). Segment 11 passes approximately 2 miles west of this WA.

Bald Mountain WA: This 22,366-acre USFS wilderness was designated in 2006. It is located on the east side of the White Pine Range in the Humboldt National Forest and is part of a series of four wilderness areas in this range (Wilderness.net 2007). The transmission facilities would pass 5.5 miles to the east of this wilderness area.

Beaver Dam Slope ACEC adjoins Mormon Mesa, Mormon Mesa Ely, Arrow Canyon and Coyote Springs ACECs to provide a continuous area of valuable habitat for the desert tortoise. Beaver Dam Slope is on the east end of this set of ACECs, which stretches from the Desert NWR to the Utah border (BLM 2008a, Appendix D). Beaver Dam Slope is about 40 miles east of Segment 11.

Becky Peak WA: This 18,119-acre BLM wilderness was established in 2006 and is located in the northern portion of the Schell Range between Water Canyon and Cherry Spring. It is east of, and across the Goshute Valley from, Goshute Canyon Wilderness (BLM 2007e).

Big Rocks WA: This 12,997-acre BLM wilderness, designated in 2004, is located between Hiko and Caliente at the south end of the North Pahroc Range. Its volcanic boulders and low elevation make it unique (BLM 2004). It would be located approximately 10 miles east of Segment 8.

Blue Eagle WSA: This 14,300-acre WSA is located in the northern half of the Grant range and is adjacent to Riordan's Well WSA. Unlike the Grant Range WSA, Blue Eagle is on BLM land (BLM 2007e). It would be approximately 6 miles from Segment 6C.

Blue Eagle WSA: This 14,300-acre WSA is located in the northern half of the Grant range and is adjacent to Riordan's Well WSA. Unlike the Grant Range WSA, Blue Eagle is on BLM land (BLM 2007e). It would be approximately 6 miles from Segment 6C.

Bristlecone WA: This BLM wilderness area is in the Egan Range due west of McGill. It was established in 2006 and is 14,095 acres in size. It is bordered by Mellison Canyon to the north and Hercules Gap to the south (BLM 2007e). It is approximately 9.5 miles northeast of the Robinson Summit Substation and 13.5 miles northeast of the RSS-Site B sub-alternative.

Cleve Creek Baldy RNA: This RNA is located within the High Schells WA (USFS Undated. a), south of the North-South Schells RNA. It is approximately 30 miles east of Segment 6C.

Clover Mountains WA: This 85,748-acre wilderness managed by the BLM was designated in 2004. It is accessed from Caliente, located approximately 10 miles to the north. The range is an ancient rhyolitic caldera of medium altitude (BLM 2004). Segment 8 would be located approximately 16 miles to the west of this wilderness.

The Currant Mountain WA is south of the Bald Mountain and Shellback WA's, located in the Currant, or White Pine, range (USFS Undated. b). Two other designated Wilderness Areas, the White Pine Range and Red Mountain WA's adjoin the Currant Mountain WA. White Pine Peak Research Natural Area, set aside to protect nearly pristine shrublands dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and bluebunch wheatgrass (*Pseudoroegneria spicata*), is within the Currant Mountain WA, but is outside of the 10-mile buffer. Segment 6C would pass approximately 9 miles east of this designated wilderness.

Far South Egan Range WA: This 36,384-acre managed wilderness was designated in 2004 and would be approximately 10 miles north of Segment 8. It shares the Egan Range with the South Egan Wilderness and is bounded by the White River Valley on the west, through which the electric transmission facilities would pass, and Cave Valley on the east. It supports a unique mix of ponderosa and bristlecone pine (BLM 2004).

Fortification Range WA: This 30,656-acre BLM wilderness was designated in 2004. It is located in the Fortification Range across Lake Valley from the Mt. Grafton Wilderness (BLM 2004). It is about 50 miles south of Ely and would be about 45 miles east of Segment 6C.

Gold Butte Part A, Gold Butte Part B, and Virgin Mountains ACECs: These three ACECs are contiguous and protect scenic, historic, and prehistoric resources, as well as desert tortoise habitat. Gold Butte, Part A is about 185,329 acres in area; Gold Butte, Part B is about 121,082 acres and includes the Gold Butte Townsite ACEC, set aside specifically for historical preservation. The adjoining Virgin Mountains ACEC is about 35,830 acres (BLM 2007f). They are located approximately 35 miles east of Segment 11.

Goshute Canyon WA: Established in 2006, this BLM wilderness area is located in the Cherry Creek Range just south of the border between Elko and White Pine counties. It is 42,544 acres in size. Paris Creek drains the central portion of this wilderness area (BLM 2007e). It is approximately 43 miles north-northeast of the Robinson Summit Substation and 47 miles north-northeast of the RSS-Site B sub-alternative.

Grant Range WA: Designated in 1989, this USFS wilderness is 52,600 acres in size and is located west of the White River Valley and east of the Railroad Valley. It is accessed only by dirt roads west of SR-318, south of Lund. Adjoining this wilderness to the south is the Quinn Canyon Wilderness (USFS Undated. b). The Grant Range WA is approximately 10 miles west-southwest of Segment 6C.

Great Basin National Park: This 77,100-acre park is located west of Baker, Nevada, and includes Wheeler Peak, ancient Bristlecone pines, and extensive caves including Lehman Caves, tours of which are provided by the NPS. It is Nevada's only National Park, designated in 1986. The park is a FLM-identified sensitive Class II airshed (**Section 3.6.3.2**). It is about 48 miles east of Segment 6C (NPS 2009a).

Hidden Valley ACEC: This ACEC is at the north end of the Muddy Mountains just northeast of Las Vegas. It was designated for its petrified wood resources, petroglyphs, and desert tortoise habitat (BLM 2000). It is approximately 11 miles southeast of the Harry Allen Substation.

Highland Ridge WA: Designated in 2006, this BLM-managed wilderness is 68,627 acres in size. It is just south of Great Basin National Park, and sits just north of the border of Nevada's White Pine and Lincoln counties (Wilderness.net 2007). It is located approximately 43 miles east of Segment 6C.

High Schells WA: This USFS wilderness area in the central portion of the Schell Creek Range is 121,497 acres in size and was designated in 2006 (Wilderness.net 2007). It is approximately 20 miles east of the Robinson Summit Substation and the RSS-Site B sub-alternative, and within its boundaries is the North-South Schells Resource RNA (see below).

Lake Mead NRA: Lake Mead was created by damming the Colorado River and was the largest dam in the world when it was built. Work began in 1931 and the area was designated as Boulder Dam Recreation Area in 1936. It provides water and electricity for

millions of people and is an important source of irrigation water in the southwest. Lake Mead National Recreation Area was designated as the first National Recreation Area in 1964 (NPS 2009c). It is approximately 50 miles southwest of the Harry Allen Substation.

Lime Canyon WA: This 23,233-acre wilderness was designated in 2002 and is administered by the BLM. It is on the east side of the Colorado River on the north end of Lake Mead and adjoins this National Recreation Area (Wilderness.net 2007). It is approximately 50 miles east of the Harry Allen Substation.

Little Humboldt River WSA: This 29,775-acre wilderness study area was designated in 1987. It is located north of the town of Midas. It includes primarily the upper drainage basin of the South Fork Little Humboldt River, situated between the middle slopes of the Snowstorm Mountains on the west, Castle Ridge on the east, Owhyee Bluffs on the south, and the Owyhee Desert on the north. It is approximately 40 miles north of the Falcon Substation.

Meadow Valley Range WA: This 123,488-acre BLM wilderness was designated in 2004. It is 50 miles northeast of Las Vegas and is bordered on the northwest by Kane Springs Canyon and on the south by Route 168. It is made up largely of lower elevation bajada landforms (BLM 2004). This wilderness is approximately 0.5 miles southwest of Segment 10 (sub-alternative).

Moapa Valley NWR: This 106-acre refuge was established in 1979 to protect Moapa dace and their habitat (USFWS 2007f). It is approximately 10 miles east of Segment 11.

Mormon Mesa ACEC: This ACEC adjoins Arrow Canyon and Coyote Springs ACECs, which adjoin the ON Line Project transmission line alignments. Each ACEC provides valuable habitat for the desert tortoise. Directly to the east lies Beaver Dam Slope ACEC, and directly north of Mormon Mesa lies Mormon Mesa-Ely ACEC. These four ACEC create a continuous habitat area for tortoises that stretches from the Desert NWR on the west to the Utah border on the east (BLM 2000). The west side of Mormon Mesa ACEC is approximately 1.25 miles east of Segment 11.

Mormon Mountains WA: This 157,938-acre wilderness, designated in 2004, is located just east of the Meadow Valley Range, separated only by Meadow Valley Wash (BLM 2004). It lies directly north of the ACECs listed above. It is approximately 10 miles east-southeast of Segment 10 (sub-alternative).

Mt. Grafton WA: This wilderness area was designated in 2006 with 78,743 acres and is located in the Schell Creek Range (BLM 2007e). It parallels and is approximately 0.75 miles west of US-93 at Geyser Ranch in Lake Valley. A power line parallels US-93 to the east. Segment 6C is located approximately 20 miles to the west of this wilderness.

Mt. Irish WA: This wilderness area is 28,334 acres in size and was designated in 2004. It is located about 8 miles west of Hiko and about 2 miles north of US Route 275. A dirt road accesses the center of the wilderness at Reed Spring (BLM 2004). This wilderness is located approximately 30 miles from Segment 9B.

Mt. Moriah RNA: The 876 acres of this RNA were designated in 2000 to protect a unique, high elevation plateau that supports an extensive mosaic of subalpine steppe grassland, an uncommon community in the Humboldt-Toiyabe National Forest (USFS Undated. a). The RNA is within the Mt Moriah Wilderness, which is north of Great Basin National Park. It is located approximately 43 miles east of the Robinson Summit Substation and the RSS-Site B sub-alternative.

Mt. Moriah WA: This jointly managed BLM/USFS wilderness is 89,790 acres in size and was designated in 1989. It is in the northern end of the Snake Range, north of Great Basin National Park (Wilderness.net 2007). It is approximately 38 miles east of the Robinson Summit Substation and the RSS-Site B sub-alternative.

Muddy Mountains WA: This wilderness area is 48,019 acres in size and was designated in 2002. It is managed by the BLM, and by the NPS on its southwest corner, where the wilderness overlaps Lake Mead National Recreation Area (Wilderness.net 2007). It is approximately 9.5 miles southeast of the Harry Allen Substation.

The Old Spanish National Historic Trail passes between the Dry Lake Range and Arrow Canyon Range into the Las Vegas Valley (NPS 2009b). It traverses approximately 5 miles south of the Harry Allen Substation. Portions of the trail are in various states including single track and wagon track.

Palisade Mesa WSA: This 99,500 acre, BLM-administered WSA is toward the southern end of the Pancake Range adjacent to the Wall WSA. The area is very rugged and difficult to access. It is characterized by steep walled canyons, spires, and clefts used by technical climbers. Numerous ephemeral washes in solid rock cascade with water, but only after rainstorms. Peak ascents bring views of the nearby lunar crater volcanic field. The rugged terrain provides refuge for prairie falcons, other raptors, and desert bighorn sheep.

Parsnip Peak WA: This wilderness of 43,693 acres was designated in 2004 and is managed by the BLM (BLM 2004). It is located in the Wilson Creek Mountains about 15 miles north of Pioche. It is approximately 25 miles from Segment 8.

The Pony Express National Historic Trail (PET) passes through the Shell Creek Range at Shellbourne Canyon, crosses Steptoe Valley north of McGill, and then enters the Cherry Creek Range at Egan Canyon. It passes approximately 30 miles to the north of the Robinson Summit Substation and 34 miles north of the RSS-Site B sub-alternative. Portions of the trail are used as roads today. Other parts are two-tracks, or have faded into the prairie.

Quinn Canyon WA: This USFS-managed wilderness was designated in 1989 and is 26,310 acres in size. It is located just south of the Grant Range Wilderness, in the mountains of the same name. It contains year-round springs and streams, which is uncommon in Nevada Wilderness (USFS Undated. b). It is located approximately 14 miles west of the junction of Segments 6 and 8.

Railroad Valley WMA: This state WMA area is on BLM land and is managed in cooperation with the Duck Valley Tribe. It is in four parcels spread across the Railroad Valley west of Blue Eagle WSA and just south of U.S. Highway 6. It is 14,720 acres in size and provides wildlife viewing and bird watching opportunities (NDOW 2007b, 2007c). It is located about 16 miles west of Segment 6C.

Red Mountain WA: This USFS-managed wilderness was designated in 2006 and is 20,490 acres in size. It is located on the east side of the White Pine Mountains, just east of Currant Mountain WA and south of Bald Mountain WA (Wilderness.net 2007). It is approximately two miles west of proposed Segment 6C.

Red Rock Springs/Devils Throat ACECs: These two adjoining ACECs are each less than 741 acres and are surrounded by Gold Butte Parts A and B ACECs. They were preserved because of their scenic, archaeological, and geological resources (BLM 2000). They are approximately 45 miles east of Segment 11 and the Harry Allen Substation.

Riordan's Well WSA: This proposed 36,200-acre WSA is on BLM land to the north of the Grant Range. It abuts the Blue Eagle WSA, which is to the north and west (BLM 2007e). It is approximately 1.5 miles to the west of Segment 6C.

Ruby Lake NWR: This 39,926-acre refuge was designated in 1938. It is located on the largest flyway between the Pacific and Mississippi Flyways. It is directly to the southeast of the Ruby Mountains. Many tourists visit the mountains and the refuge due to the array of easily accessible habitats and scenic qualities of these areas (USFWS 2007g). It is located approximately 45 miles north-northwest of the Robinson Summit Substation and 49 miles north-northwest of the RSS-Site B sub-alternative.

Shellback WA: This USFS-managed wilderness is located north of the Bald Mountain WA on the east side of the White Pine Range. Its 36,143 acres were designated in 2006 (Wilderness.net 2007). It would be located approximately 8 miles west of Segment 6C.

South Egan Range WA: The BLM-managed South Egan wilderness is 67,214 acres and was designated in 2006. It shares the Egan Range with the Far South Egans WA. This range overlooks the White River Valley (BLM 2007e). The wilderness is 8.5 miles east of Segment 6C.

South Pahroc Range WA: This 25,800-acre wilderness managed by the BLM was designated in 2004 and supports a wide variety of large mammals, including re-introduced big horn sheep. It is located west of Caliente and is bordered by the 6-mile and 8-mile valleys to the west and the Pahroc Valley to the east. US-93 passes 4 miles to the north. Segment 9B would pass approximately 4.5 miles to the east of the south end of this wilderness area, and Segment 9A would pass 5 miles south of this wilderness area.

Steptoe Valley WMA: This state-run wildlife management area sits near the south end of Steptoe Valley. It is located about 3 miles due south of Ely. It is managed for waterfowl, fish, and hunting and provides a variety of habitats for game animals and small game as well (NDOW 2005). The WMA is approximately 20 miles east of Segment 6C.

The Wall WSA: This 38,000-acre WSA is located approximately 75 miles east of Tonopah on BLM land. "The Wall" was named for its sheer, black, vertical face. It is a volcanic formation of magma and ash. The back side of the wall is a labyrinth of gullies and washes. The vertical perspective created by the Wall, which has vertical relief between 600 and 2,000 feet in height, gives the impression of an impenetrable fortress looming over the flat sands and playas of the Railroad Valley. It is located approximately 45 miles west of Segment 8.

Troy Peak RNA: This 2,500-acre RNA covers the highest elevations of the Grant Range and is within the Grant Range Wilderness. The area was designated to protect unique rock barrens and three plant species: the Nevada primrose (*Primula nevadensis*), waxflower (*Jamesia tetrapetata*), and Nachlinger's catchfly (*Silene nachlingerae*) (USFS Undated. a). The RNA is approximately 12 miles west of Segment 6C.

Tunnel Springs WA: This 2004-designated wilderness covers 5,371 acres of BLM land. It is located on the Utah-Nevada border and adjoins the north border of Beaver Dam State Park. It is accessed from Caliente via the State Park or from the Dixie National Forest in Utah (BLM 2004). It is located approximately 40 miles east of Segment 9B.

Virgin Mountains ACEC: See Gold Butte Part A, Part B in this section, above.

Virgin River ACEC: This ACEC follows the riparian zone of the Virgin River as it flows from the Utah-Nevada border toward Las Vegas. It is south of I-15. It was designated to protect riparian species, such as the southwestern willow flycatcher, a designated threatened species. The ACEC also contains habitat for desert tortoise. It is approximately 7,413 acres.

Weepah Springs WA: This 51,480-acre BLM-managed wilderness was designated in 2004. It is located in the Seaman Range and Timber Mountain, about 20 miles north of Hiko (BLM 2004). It is approximately 16 miles southwest of Segment 8.

White Pine Peak RNA: This 797-acre RNA, located within the Currant Wilderness, supports nearly pristine shrublands dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and bluebunch wheatgrass (*Pseudoroegneria spicata*). Although typical vegetation of the Great Basin, the dominance of these species is being challenged by invasives at lower elevations (USFS Undated. a). This RNA is located approximately 11 miles from Segment 6C.

White Pine Range WA: This 40,013-acre wilderness is managed by the USFS and is on the west side of its namesake range. Other wilderness areas in this range include the Shellback, Bald Mountain, Currant Mountain, and Red Mountain wildernesses (USFS Undated. b). The White Pine WA is approximately 12 miles west of Segment 6C.

White Rock Range WA: This BLM wilderness area is 24,413 acres and was designated in 2004. It is located east of the Wilson Creek Range on the Utah border just north of the Beaver-Iron County (Utah) line (Wilderness.net 2007). It is approximately 35 miles east of Segment 8.

Worthington Mountains WA: This wilderness is 30,664 acres in size and was designated as wilderness in 2004. It is located south of the Grant Mountains and several miles north of US Route 375 (BLM 2004). Segment 9B is located approximately 48 miles east of this WA.

3.14 Recreation

3.14.1 Area of Analysis

The area of analysis for direct and indirect effects on recreation resources includes a 50-mile radius or buffer surrounding the project area.

3.14.2 Data Sources and Methods

The information used to characterize developed recreation resources in the project area was gathered from a variety of sources, predominately information from the Ely and Southern Nevada BLM District Offices, USFS, and NPS. State and local resources and their use were gleaned from other publicly available sources such as the Nevada Division of State Parks and NDOW.

3.14.3 Existing Conditions

As indicated in **Table 3.12-1** above, public lands (those managed by federal, state, or county entities) account for the vast majority of land in the counties affected by the proposed project. Recreational use on public lands is governed by management plans outlined in **Section 3.14.3.1**. Much of these public lands are managed to allow for dispersed recreation, as described in **Section 3.14.3.2**. A number of developed recreation areas are located within a 50-mile radius of the project components, as described in **Section 3.14.3.3**. In addition, a limited

number of private enterprises offer recreation opportunities, such as campgrounds and RV parks.

3.14.3.1 Existing Recreation Management Plans and Policies

A number of land management plans and policies apply to the project area. These include BLM RMPs, the Statewide Comprehensive Outdoor Recreation Plan (SCORP), and county land use regulations. These plans and policies as they relate to recreation opportunities are described further below.

3.14.3.2 Federal Recreation Management Plans, Policies, and Statutes

Federal lands that would be directly impacted by the ON Line Project are BLM lands. As described in **Section 3.12.3** above, two BLM district offices administer the federal lands affected by the proposed project (Ely and Southern Nevada). Within these BLM districts, two resource areas are identified and have management plans in place that govern use, including recreation.

BLM Ely RMP

The BLM Ely District Office RMP (BLM 2008a) is described in detail in **Section 3.12.3.1**. A majority of the planning area is available for dispersed, backcountry, and undeveloped recreational uses. These areas will be managed as extensive recreation management areas. These areas include trails, routes, trailheads, staging areas, and associated structures. The RMP provides for management of five Special Recreation Management Areas (SRMAs), including development of SRMA plans, and established areas and routes for permitted motorized competition events.

BLM Southern Nevada (Las Vegas) Resource Area RMP

Similar to the other resource area, the Las Vegas RMP (BLM 1998a) notes that the principal recreation opportunities are for casual or dispersed recreational activities, such as caving, photography, automobile touring, backpacking, birdwatching, hunting, hiking, and competitive and non-competitive off-highway vehicle (OHV) use. SRMAs in the Resource Area will be managed to provide recreation opportunities appropriate to the resource. Several SRMAs are managed, at least in part, for OHV use.

National Park Service Historic Trails Management Plan

The NPS completed a Comprehensive Management and Use Plan and Final EIS in 1999 for the Pony Express National Historic Trail along with three other historic trails. The document focuses on the Trail's purpose and significance, issues, and concerns related to current conditions along the trail, resource protection, visitor experience and use, and long-term administrative and management objectives. The plan identifies high-potential route segments and sites. High-potential segments are "those portions of trail which would afford a high quality recreation experience in a portion of the route having greater-than-average scenic values or affording an opportunity to vicariously share in the experience of the original users of the historic route." High-potential sites are "those historic sites related to the route which provide opportunity to interpret the historic significance of the trail during the period of its major use." The Pony Express National Historic Trail is north of the project area.

A Comprehensive Management Plan and Draft Environmental Impact Statement is underway for the Old Spanish National Historic Trail (NPS 2009b). The plan will provide general guidance for trail administration. The Old Spanish Trail is located south of the ON Line Project area. The NPS and BLM jointly administer the Old Spanish National Historic Trail.

Lake Mead National Recreation Area Lake Management Plan

In 1986, the *Lake Mead National Recreation Area General Management Plan (GMP) and Final Environmental Impact Statement* established land-based management zones and strategies for meeting the goals and general purposes of the recreation area. Since that time, management issues related to the increase in recreational use of the lakes, visitor conflicts and safety, potential impacts on park resources from water-related recreation, and personal watercraft use surfaced that have not been adequately addressed or resolved in previous planning efforts. In 1992 park managers determined that the development of a lake management plan was necessary to address issues surfacing from increased visitation to Lakes Mead and Mohave (NPS 2002).

The Lake Management Plan, finalized in 2003, tiers from the 1986 GMP. The plan addresses recreational use of approximately 160,000 acres of water contained within the 1.5 million acre National Recreation Area. The document addresses recreational issues including recreational carrying capacity and zoning, developed areas and facilities, sanitation and litter, recreational services, and visitor conflict affecting the recreational setting (NPS 2003).

Lincoln County Conservation, Recreation, and Development Act of 2004

The Lincoln County Conservation, Recreation, and Development Act (LCCRDA) was passed by Congress to establish wilderness areas, promote conservation, improve public land, and provide for high quality development in Lincoln County. It provides for the disposal of up to 90,000 acres of public land within Lincoln County. The LCCRDA directed BLM to convey to the State of Nevada the parcels of land identified as 'NV St. Park Expansion Proposal' and convey to Lincoln County up to 15,000 acres for open space. This effectively increased the size of state parks and county recreation areas. The LCCRDA directed transfer of BLM administered lands to the USFWS for inclusion in the Desert National Wildlife Range. In return, USFWS lands were transferred to BLM in order to relocate the alignment of the 2,640-foot wide WWEC from the east side of US-93 to the west side of US-93, between the highway and the Desert National Wildlife Range. Designation of the Silver State OHV Trail was also provided.

White Pine County Conservation, Recreation, and Development Act of 2006

The White Pine County Conservation, Recreation, and Development Act (WPCCRDA) expanded two existing wilderness areas (Mount Moriah and Currant Mountain) and designated 12 new wilderness areas. It directed the transfer of land from USFS to BLM around the Great Basin National Park to simplify land management in order to protect the park's unique natural resources. Further, it transferred jurisdiction of land from BLM to the USFWS for inclusion in the Ruby Lake National Wildlife Refuge. Under the WPCCRDA, four parcels of public land were transferred to the Ely Shoshone Tribe for traditional, ceremonial, commercial, and residential purposes. Two small parcels of public land were conveyed for the expansion of the airport and industrial park in White Pine County to support future economic development. The WPCCRDA set up an account to dispose of up to 45,000 acres of public lands out of BLM management into private ownership. The law also supports a three-year study for a potential extension of the Silver State OHV trail, promotes resource protection, and a county-wide recreation study.

State Comprehensive Outdoor Recreation Plan

The SCORP, prepared by the Nevada Division of State Parks (2004), provides an assessment of Nevada's characteristics, people, resources, and recreational activities and critical recreation issues facing the state. Nevada has a variety of natural resources available to the public for

participation in outdoor recreation activities. Nevada has more mountain ranges and public lands than any other state except Alaska (Nevada Division of State Parks 2004).

The SCORP reported that 84 percent of Nevadans 16 years of age and older participated in at least one outdoor recreational activity in the year 2000. In that same year, the percent of Nevadans 16 years of age and older participating in specific outdoor recreation activities was as follows: 44 percent pleasure driving, 37 percent picnicking, 32 percent swimming in a pool, 32 percent walking without a dog, 31 percent wildlife viewing, 30 percent swimming in a lake or stream, 28 percent hiking, 28 percent walking with a dog, 27 percent motorboating, and 26 percent lake fishing. In 2002, Nevadans participated in an estimated 235 million annual participation days of outdoor recreational activities in Nevada (Nevada Division of State Parks 2004).

Nevada has a high percentage (approximately 88 percent) of land administered by the federal government. The SCORP reported that 99 percent of the residents in Nevada living in rural areas said that the management of Nevada's public lands is either very important (98 percent) or important (1 percent) to them (Nevada Division of State Parks 2004).

The SCORP identified future recreation issues and actions for the state as a whole. The top five prioritized issues were:

- Public Access to Public Lands for Diverse Outdoor Recreation – There is a growing public desire to protect, maintain, and increase public access to public lands for the greatest diversity of outdoor recreational users.
- Funding Parks and Recreation – The maintenance of outdoor recreation areas and facilities at the federal, state, and local levels in Nevada has not kept pace with demands created by the rapid increases of population in Nevada and the increasing number of out-of-state visitors.
- Recreational Trails and Pathways – One of the greatest assets in Nevada to attract tourists to the state is the natural resource base found largely on public lands, and trails compliment this expansive natural resource base.
- Balancing the Protection of Nevada's Natural, Cultural, and Scenic Resources with Users – Find an appropriate balance between outdoor recreation activities (consumptive by definition) and preserving natural, cultural, and scenic resources.
- Protecting Water Resources as Vital Components of Nevada's Recreational Base – Because Nevada is the driest state in the U.S., it is critical that water resources be protected to maintain the needed quantity, quality, and accessibility for public recreation. Recreation and wildlife depend on the limited water resources in Nevada.

County Recreation Management Plans and Policies

Eureka County

The Eureka County Master Plan (Eureka County 2000) provides recommendations for and supports development of recreation areas in the county. It supports both active and passive recreation activities.

White Pine County

The White Pine County Public Land Use Plan (White Pine County 2008), a coordinated land use planning effort among the county, BLM, and USFS, supports activities by participating in county-wide youth programs and activities, enhancing and preserving existing recreational facilities,

and supporting new recreational facilities in the county. It also encourages dispersed recreational opportunities. The plan also states that federally managed lands with the value for concentrated recreation use (campgrounds, water recreation sites, etc.) should be identified, developed, and managed for recreational purposes.

The White Pine County Open Space plan provides recommendations regarding open space and recreation in the Urban Interface Area that consists of Steptoe Valley north of McGill to Mattier Creek, west into Smith Valley, east into Duck Creek Basin, and south through Steptoe Valley to Conners Pass, as well as areas around Preston and Lund. White Pine County created the Open Space Plan to protect and develop the many natural resources and amenities present, as open space is critical to the County's economic, historical, and cultural identity (White Pine County 2007).

Nye County

There is no comprehensive county-wide plan that addresses the management of recreation resources.

Lincoln County

The Lincoln County Master Plan (2006) describes a lightly populated county dominated by federal land ownership. Low population density creates financial constraints on development of county-level public and private recreation opportunities. Through the plan, the County seeks to work with federal land managers to plan for development and expansion of recreation opportunities; to develop a recreational opportunities inventory; to seek outside sources of funding for improvement of recreational facilities; and to expand its website to promote tourism opportunities in the county.

The Lincoln County Strategic Tourism Plan (Harris et al. 2004), prepared by the University of Nevada Center for Economic Development, notes that there are few developed recreation sites in the county. Most recreation in the county is resource-based and dispersed. The rural communities of Pioche, Caliente, and Alamo all offer cultural heritage sites, local parks, camping, hiking, and, hunting opportunities. Lincoln County is also home to "Area 51" and the Extraterrestrial Highway (U.S. Highway 375) that extends from Alamo to Rachel and draws visitors to the region (Harris et al. 2004).

Clark County

The Clark County Comprehensive Plan has elements that discuss land use and recreation policies and standards (Clark County 2007b). The proposed ON Line Project would terminate at the Harry Allen Substation in the northeast portion of Las Vegas Valley. This area is designated as heavy industrial land use. Lands north of this area to the county line are designated as open space.

3.14.3.3 Recreation Opportunities

Open space and wildlands are very important to Nevadans. According to the 2004 SCORP, 100 percent of Nevada residents living in urban areas and 99 percent of rural Nevada residents said that the management of Nevada's public lands was important or very important. In 2001, 67 percent of Nevada residents surveyed wanted to set aside more designated wilderness areas in the state, and over 90 percent said that maintaining unique or unusual natural and historical areas was important to them. In 2002, Nevada voters approved a measure to issue $200 million in bonds for conservation and resource protection. In the 2004 SCORP survey, public access to public lands was listed as the number one issue for people interested in outdoor recreation. The

expansive federal lands in Nevada are viewed as a valuable economic resource (Nevada Division of State Parks 2004).

Dispersed Recreation Areas

Popular dispersed recreation activities include OHV use (including 4-wheel drive vehicles, ATVs, and motorcycles), hiking, horseback riding, mountain biking, rock collecting, picnicking, primitive or backcountry camping, wildlife viewing, hunting, boating, and fishing. BLM public lands also accommodate permitted annual events including events such as truck, buggy, motorcycle, and bike races, Pony Express Trail endurance and reenactment rides, and club rocket launches (BLM 2008a). With regard to OHV use and motorized competitive events, The Ely RMP:

- Limits OHV use to designated roads and trails on approximately 10.3 million acres within the planning area boundary.
- Allows for a maximum of two competitive truck events per year.
- Closes all desert tortoise ACECs to all high-speed, competitive OHV use, and limits organized non-speed OHV events (BLM 2008a).

In order to manage recreation in conjunction with the other multiple uses on BLM lands, the BLM has established the following designations:

- BLM Ely District Extensive Recreation Management Areas (ERMA)

  Most public lands within and in the vicinity of the project area are open to dispersed recreation, and are managed as ERMAs, which are areas that include all BLM lands outside SRMAs. ERMAs typically do not contain organized or developed areas facilitating recreational activities, such as campgrounds. Rather, recreationists receive broad guidance on appropriate recreational uses that are consistent with multiple resource management.

- BLM Ely District SRMAs

  A SRMA is an area where more intensive recreation management is needed, where a commitment has been made to provide specific recreation activity and experience opportunities, and where recreation is a principal management objective (BLM 2008a).

- BLM Ely District Special Recreation Permit (SRP) Areas

  Four SRP areas totaling approximately 1.3 million acres will be managed to provide opportunities for competitive motorcycle special recreation permitted events, with competitive events managed on designated routes.

In addition to their value for their special designations, these areas are also valuable recreation areas. Hunting and wildlife viewing are important recreation activities in Nevada. Big game hunting in eastern and southern Nevada includes mule deer, Rocky Mountain elk, pronghorn antelope, bighorn sheep, and mountain goat. The hunt units along the proposed alignment contain all these big game species. Hunters often rely on maintained roads and smaller jeep trails to access areas for hunting. Some wilderness study areas and designated wilderness are located within various hunt units, so motorized equipment and mechanized transport are prohibited and access is on foot or horseback. Hunter success varies by unit and type of hunt and is high on average with most filling their tags.

Wilderness areas, wilderness study areas, wildlife refuges, and state wildlife management areas, in particular, are managed for values other than recreation; however, they are extremely

valuable for dispersed recreation. As it relates to recreation, wilderness, and wilderness study areas, the Ely RMP:

- Closes designated wilderness to motorized and mechanized travel according to policy and enabling legislation.
- Closes the Park Range, Blue Eagle, Antelope Range, and Riordan's Well WSAs to motorized and mechanized travel.

Developed Recreation Opportunities
More than 30 developed recreation areas and sites occur near the proposed locations of project elements. These sites, along with other recreation resources within 50 miles of major project elements are shown in **Figure 3.14-1** below. These are areas that have been developed or are maintained and regionally recognized as locations for specific recreational activities and opportunities. Most of the areas and sites listed below are associated with resource-based recreation activities.

3.14.4 Specific Project Area Conditions

Table 3.14-1 lists areas with specific designation for recreation management (BLM 2008a) within a 50-mile radius of the project components. Project components that would be located on public lands would be in areas of dispersed recreation. In addition to their value for their special designations, these areas are also valuable recreation areas. While WAs, WSAs, wildlife refuges, and most state wildlife management areas offer opportunities primarily for dispersed recreation, some limited developed recreation opportunities exist within a few of these special designations. Some wildlife refuges and state wildlife management areas provide interpretive facilities, boat launch ramps, and docks, for example. Upland game bird hunting areas are also dispersed throughout the project area.

There are more than 30 developed recreation areas within a 50-mile radius of the various project components (**Table 3.14-2**). None of the proposed project components would be located in developed recreation areas and sites.

The ON Line Project would be within 50 miles of 8 SRMAs and 3 SRPs (**Table 3.14-1**). Certain segments of the transmission line alignments are located within or adjacent to popular big game range and overlap hunting districts. The Proposed Action would occur immediately adjacent to the Desert NWR. The Kirch Wildlife Management Area and the Pahranagat National Wildlife Refuge are also located near the transmission line alignments.

The Proposed Action and Action Alternative would occur within or cross the Loneliest Highway, Chief Mountain, and North Delamar SRMAs. Transmission line facilities would also cross the Ely SRP Area.

TABLE 3.14-1 SPECIAL RECREATION MANAGEMENT AND SPECIAL RECREATION PERMIT AREAS WITHIN 50 MILES OF THE ON LINE PROJECT

NAME	LOCATION	DESCRIPTION
The Loneliest Highway SRMA[1]	Along and on either side of US-50 as it transects the Ely BLM District.	This SRMA contains some of the most popular destinations. The management objectives of the SRMA are to provide a broad recreation opportunity spectrum ensuring a balance of recreation experiences. Developed recreation opportunities found within the Loneliest Highway SRMA are described in **Table 3.14-2**.
Chief Mountain SRMA**	Northwest of Caliente, north of US-93, west of SR-317, and south of SR-320.	To be managed for a broad recreation opportunity spectrum ensuring a balance of recreation experiences on approximately 111,181 acres.
Egan Crest SRMA[1]	Approximately 15 miles directly south of Ely and approximately 5 miles northeast of Lund.	To be managed for a broad recreation opportunity spectrum ensuring a balance of recreation experiences on approximately 53,455 acres.
Pahranagat SRMA[1]	Either side of US-93 from just south of Alamo to the intersection of US-93 and SR-375; and northeast of Hiko north of US-93 and east of SR-318.	To be managed for a broad recreation opportunity spectrum ensuring a balance of recreation experiences on approximately 298,500 acres.
North Delamar SRMA[1]	Just south of Caliente, either side of SR-317.	To be managed for a broad recreation opportunity spectrum ensuring a balance of recreation experiences on approximately 202,890 acres.
Ely SRP Area[1]	A linear narrow strip of land stretching north from the intersection of SR-318 and US-6, ending southwest of Cherry Creek.	Dispersed recreation includes competitive motorcycle opportunities.
Pioche SRP Area[1]	Either side of US-93 North of Pioche, to just north of the intersection with SR-894. Roughly bounded on the south by SR-320.	Dispersed recreation includes competitive motorcycle opportunities.
Zunino/Jiggs Reservoir SRMA[2]	30 miles south of Elko via SR-227 and SR-228	Utilized primarily by local residents for year-round camping, picnicking, fishing, boating, wildlife observation, and water-based recreation.
Caliente SRP Area[1]	Northwest of Caliente, mostly north of US-93 and west of SR-317, and mostly southeast of Panaca, south of SR-319 and east of SR-317.	Dispersed recreation includes competitive motorcycle opportunities.
Muddy Mountains SRMA	East of Las Vegas.	This SRMA is managed for primitive and semi-primitive recreation opportunities including camping, hiking, and sightseeing. The Bitter Spring Back-country Byway bisects the SRMA. The SRMA is partially motorized and partially non-motorized. Some motorcycle racing occurs in the eastern portions of the SRMA, but most OHV opportunities are for trucks and SUVs (BLM 1998a).
Nellis Dunes SRMA	Approximately 15 miles northeast of Las Vegas	The Nellis Dunes SRMA is open to unrestricted OHV use. It is the closest resource to the Las Vegas metropolitan area for legal OHV use. The SRMA supports approximately eight OHV events annually, including large scale organized OHV races. There is growing popularity for commercial 4x4 tours, with two commercial tour guides operating almost exclusively at the SRMA. Several other commercial tours are also authorized for operation at the SRMA. The area receives a high volume of use during spring, fall, and winter, but use does occur year round. The SRMA is currently undeveloped, but BLM is working with Clark County to develop a plan. The area is closed to both camping and hunting (BLM 1998a).

[1]Source: BLM 2008a
[2]Source: BLM 1985

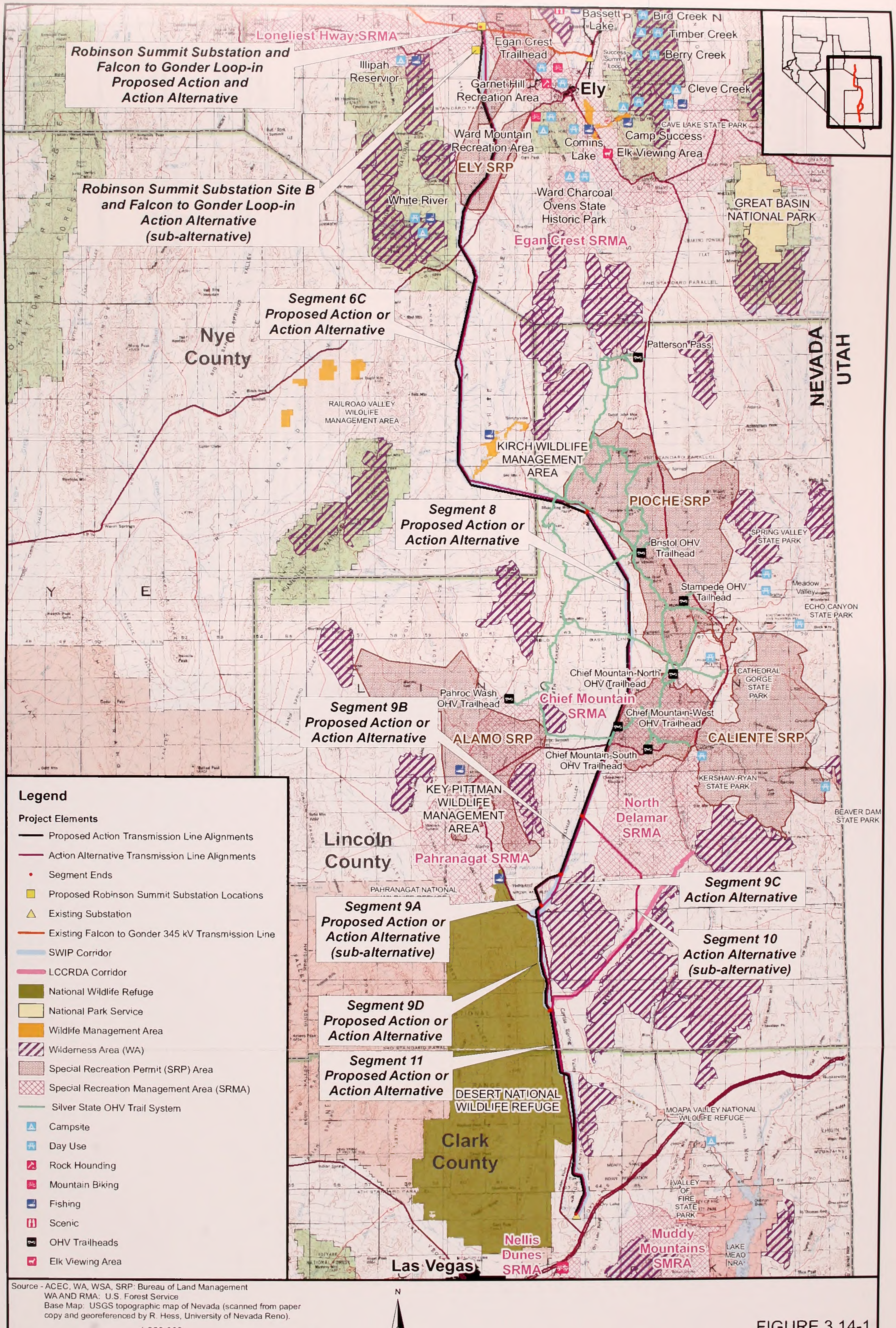


FIGURE 3.14-1
EXISTING RECREATION AREAS AND SITES ON LINE PROJECT

TABLE 3.14-2 DEVELOPED RECREATION OPPORTUNITIES WITHIN 50 MILES OF THE ON LINE PROJECT

NAME	LOCATION	DESCRIPTION
		FEDERAL
Berry Creek Campground	Five miles north of McGill on US-93, then 10 miles east on SR-486, then 5 miles east on Forest Service Road 424.	The Berry Creek Campground is located in a white fir forest around the confluence of the North Fork and South Fork of Berry Creek. The campsite offers hunting, fishing, and hiking (USFS 2007a).
Bird Creek Campground	Located in the Duck Creek Basin approximately 14 miles northeast of McGill off of Forest Service Road 426.	The campground has eight group use sites for RVs and tents, concrete pads, fire pits and cooking grills, drinking water, and a vault toilet. Bird Creek, a perennial stream, runs through the middle of the picnic area. Hiking is the primary recreational activity (USFS 2007a).
Chief Mountain OHV Area	The south access point is located at Oak Springs Summit on the north side of US-93 about 5 miles west of Caliente(BLM 2008a).	The Chief Mountain area is frequently used for off-highway vehicles. There is a trailhead in conjunction with three designated OHV trails: the Red Rhyolyte Trail, Grey Dome Trail, and Silver State Trail (Lincoln County 2008). The area is scenic and has a good network of social trails.
Cleve Creek Campground	Approximately 43 miles from Ely traveling northbound on SR-893 from US-6/50.	Cleve Creek Campground is located in Spring Valley near the mouth of a major drainage on the east side of the Schell Creek Range. Cleve Creek is a year-round stream that supports abundant vegetation at the campground. Fishing, hiking, horseback riding, and OHV use are all available recreation activities. There are 12 tables and a group barbeque area available (BLM 2007g).
Desert National Wildlife Refuge	Located approximately 23 miles north of Las Vegas on US-93.	Desert NWR encompasses 1.5 million acres of Mojave Desert in southern Nevada. It is the largest National Wildlife Refuge in the lower 48 states. Recreation activities include birdwatching, camping, hiking, backpacking, and horseback riding. There is also limited hunting for bighorn sheep.
East Creek Campground	Approximately 12 miles northeast of McGill off of Forest Service Road 427.	The East Creek Campground is located in the Duck Creek Basin high on the slopes of the Schell Creek Range in the middle of an Alder, Pinyon, and Juniper forest. The campground has seven campsites for both recreational vehicles (RVs) and tents. Hiking is the primary recreational activity (USFS 2007a).
Egan Crest Trailhead	Eight miles west of Ely just off US-50 on the north side.	The Egan Crest Trail System provides recreationists with over 50 miles of trails with a variety of terrain from the rolling sagebrush flats to the higher elevations in pinyon and juniper forests. The trailhead has picnic tables, grills, a gravel parking lot, and an information kiosk (BLM 2007g).
Ely Elk Viewing Area	Along US-93 south of Ely and at the viewing area pull-out.	The largest herd of elk in Nevada can be observed feeding during the fall and spring seasons. Peak viewing times are October through November, and March through April, with elk sometimes also seen in mid-winter. Other watchable wildlife species in the area include golden eagles, ravens, black-tailed jackrabbits, and chipmunks (Leisure and Sport Review 2007).
Garnet Hill Recreation**Error! Bookmark not defined.** Area	Located 9.5 miles north of Ely via US-50.	This recreation area is an internationally known site for gem collectors looking for garnets. It also provides picnicking and camping opportunities (BLM 2007g).
Great Basin National Park	Approximately 50 miles east of Ely on US-6/50 to SR-487 and Baker.	This 77,000-acre National Park offers both developed and dispersed recreation opportunities. Developed recreation opportunities occur mainly on the east side of the Snake Range ridgeline and include the 12-mile Wheeler Peak Scenic Drive, four developed campgrounds, one of which is open year-round; eight wild caves accessible with a cave permit and guided tours of Lehman Caves. The park has two picnic areas, as well as the campground that has areas available for picnicking. Visitation of approximately 80,000 in recent years (Great Basin NP 2008).

NAME	LOCATION	DESCRIPTION
Illipah Reservoir	Just south of US-50 about 40 miles west of Ely. There is a sign marking the turnoff to Hamilton (ghost town) and Illipah Reservoir.	This recreation site is located at the base of the White Pine Range and has a small fishing reservoir. Illipah is a popular spot to fish for rainbow trout and brown trout throughout the year. Ice fishing is a popular activity during the winter. Mountain biking, hiking, horseback riding, and sightseeing are some of the additional activities available in the area. The campground has 14 sites with tent and RV sites available. The campground is approximately 1 mile off of the highway (BLM 2007g).
Lake Mead NRA	East and south of Las Vegas along the Nevada – Arizona state line, and extending north from the state line east of Valley of Fire SP.	Lake Mead NRA consists of 160,000 surface acres of Lake Mead and Lake Mohave surrounded by 1.5 million acres of land. Recreational activities include hiking, camping, fishing, biking, and boating (NPS 2008).
Meadow Valley	In Lincoln County east of Pioche SR-322 past Ursine.	The Meadow Valley Recreation Site main campground lies in a narrow side canyon called Nicanor Canyon in the Mt. Wilson Range, at approximately 5,800-foot elevation. There is a camping area available in the side canyon with approximately six sites. Fishing, hiking, and bird watching are popular in the area. This recreation site borders Spring Valley State Park, which provides additional fishing and hiking opportunities (BLM 2007g).
Pony Express National Historic Trail	The Trail enters Steptoe Valley through Egan Canyon and runs approximately east-west across the BLM Ely District in the project area.	The Pony Express National Historic Trail was established as a National Historic Trail by Congress in 1992. The Trail is administered by the National Trails System, Salt Lake City, Utah office, but responsibility for management of the Trail lays in the hands of current trail managers at the federal, state, local, and private levels. Recreational uses of the Trail include hiking, biking, horseback riding, and historic reenactments of the trail experience. Use of the Trail is increasing because of heritage tourism (people rediscovering their past), commemorative activities, and media interest (NPS 2007a).
Success Summit Loop	Links US-50 and US-93 north of Ely and McGill.	The graded loop road runs through the Schell Creek Range of the Humboldt-Toiyabe National Forest. Along most of its length the road is at aspen level, providing for scenic views, especially during the fall season.
Timber Creek Campground	Approximately 16 miles northeast of McGill off of Forest Service Road 425.	The Timber Creek Campground is in a spruce, fir, and aspen forest setting. It has six single sites and six group sites for both RVs and tents. The campground offers concrete pads, fire pits and cooking grills, drinking water, vault toilets, and a playground with a sandbox. Timber Creek is a perennial stream and runs through the middle of the campground. Hiking, nature/wildlife viewing, and horseback riding are the primary recreational activities in this area (USFS 2007a).
Ward Mountain Recreation**Error! Bookmark not defined.** Area	Approximately 6 miles south of Ely via US-6.	There are 20 miles of trails that meander through the sagebrush and pinyon-juniper forests of Ward Mountain. These trails are available for hikers, bikers, skiers, horses, motorcycles, and snowmobiles. This site is jointly administered by the BLM and the USFS (BLM 2007g).
White River Campground	At the base of Currant Mountain near the Currant Mountain Wilderness in the White Pine Mountain Range.	The White River Campground straddles the White River. The campground is approximately 34 miles southeast of Ely off of Forest Service Road 1163. It has ten sites with fire pits, camping grills, and vault toilets. The primary recreational activities are hiking, sightseeing, wildlife/nature viewing, backpacking, hunting, and all-terrain vehicle/OHV riding (USFS 2007a).

NAME	LOCATION	DESCRIPTION
STATE		
South Fork State Recreation Area	16 miles south of Elko on SR-228	This recreation is popular for popular for hunting, camping, boating, picnicking, winter sports, and wildlife viewing. It includes a 1,650-acre reservoir and 2,200 acres of meadow area.
Cave Lake State Park	Approximately 15 miles southeast of Ely via SR-486.	Cave Lake State Park is open year round. The 32-acre reservoir at Cave Lake State Park is popular for trout fishing, crawdadding, boating, picnicking, and camping. The park is located in the Schell Creek Range at an elevation of 7,300 feet, offering scenic views and opportunities for nature study and photography. Facilities include campgrounds, picnic areas, hiking trails, and a boat launch. Winter sports such as ice fishing, cross-country skiing, and ice-skating also are available. Snow sculpting is becoming a popular activity, and the White Pine Fire & Ice Show is the premier winter event in the area (Nevada Division of State Parks 2007a). Total visitation at Cave Lake State Park for 2000 was 76,105. In 2006, the total visitation was 56,322. This represents a general decrease in visitation at the park of 26 percent over the last 7 years. By comparison, the decreased visitation trend across all Region V parks was 13 percent (Nevada Division of State Parks 2007b).
Comins Lake	Approximately 10 miles southeast of Ely via US-50/6/93.	Originally established by the realignment of US-93 that created a dam, it is fed by both Steptoe and Cave Creeks from the east, and Willow Creek from the south. At capacity, the lake covers 410 surface acres and has a maximum depth of 15 feet. In 1999, the lake and the adjacent 3-C Ranch were purchased by the NDOW. The lake is now managed to maximize fisheries resources and contains rainbow trout, brown trout, largemouth bass, and northern pike (NDOW 2007d).
Ward Charcoal Ovens State Historic Park	Seven miles south of Ely via US-50/6/93, then 11 miles southwest on Cave Valley Road in the Egan Mountain Range.	Ward Charcoal Ovens State Historic Park is mostly known for its six beehive-shaped historic charcoal ovens used in the late 19th century to generate charcoal for use in the mines of nearby Ward. The park also offers an array of recreational opportunities including hiking, mountain biking, and ATV riding. Other features include forested woodlands, riparian areas, and views of Steptoe Valley and views of Wheeler Peak, located in the Great Basin National Park (Nevada Division of State Parks 2007a). Total visitation at Ward Charcoal Ovens State Historic Park for 2000 was 11,977. In 2006, the total visitation was 4,390. This represents a general decrease in visitation at the park of 37 percent over the last 7 years. By comparison, the visitation trend across all Region V parks was down by 13 percent (Nevada Division of State Parks 2007b).
Beaver Dam	Approximately 34 miles east of Caliente adjacent to the Utah border. Motorists can reach the park by driving 6 miles north of Caliente on US-93, then 28 miles east on a graded gravel road that leads to the park entrance.	Beaver Dam State Park is Eastern Nevada's most remote park. Deep canyons, pinion and juniper forests, a flowing stream and numerous beaver dams are the primary features, offering fishing, camping, picnicking, hiking, photography, and nature study. Facilities include campgrounds, a group use area, a day-use picnic area, and hiking and interpretive trails. Beaver Dam is open year-round weather permitting (Nevada Division of State Parks 2007a). Total visitation at Beaver Dam for 2000 was 8,393. In 2006, the total visitation was 5,939. This represents a general decrease in visitation at the park of 29 percent over the last 7 years. By comparison, the visitation trend across all Region V parks decreased by 13 percent (Nevada Division of State Parks 2007b).

NAME	LOCATION	DESCRIPTION
Cathedral Gorge	Just west of US-93, 2 miles north of Panaca.	Cathedral Gorge is located in a long, narrow valley where erosion has carved dramatic and unique patterns in the soft bentonite clay. Trails abound for exploring the cave-like formations and cathedral-like spires. Miller Point, a scenic overlook just north of the park entrance on US-93, offers excellent views of the scenic canyon. Shaded picnic areas and a tree-shaded campground area are open all year. Hiking, picnicking, camping, nature study, photography and ranger programs are the most common activities at the park (Nevada Division of State Parks 2007a). Total visitation at Cathedral Gorge for 2000 was 57,167. In 2006, the total visitation was 59,705. This represents a general increase in visitation at the park of 4 percent over the last 7 years. By comparison, the visitation trend across all Region V parks decreased by 13 percent (Nevada Division of State Parks 2007b).
Echo Canyon State Park	Twelve miles east of Pioche via SR-322 and SR-323.	Echo Canyon State Park offers a 65-acre reservoir with a campground, picnic area, group use facilities, and boat launch. The park is popular for camping, fishing, and hiking (Nevada Division of State Parks 2007a). Total visitation at Echo Canyon Reservoir for 2000 was 49,762. In 2006, the total visitation was 38,118. This represents a general decrease in visitation at the park of 23 percent over the last 7 years. By comparison, the visitation trend across all Region V parks decreased by 13 percent (Nevada Division of State Parks 2007b).
Kershaw-Ryan State Park	Two miles south of Caliente via US-93 and SR-317.	Kershaw-Ryan State Park is situated in a colorful, scenic canyon at the northern limit of Rainbow Canyon. Steep canyon walls tower over a long, narrow valley. Early settlers here cultivated a garden of grape vines, trees, and grassy lawn surrounding a spring-fed pond, providing a sharp contrast to the rugged landscape. In 1984, flash floods destroyed most of the park, requiring its closure. It re-opened again in 1997. A picnic area, restrooms, and trails offer visitors nature study, photography, picnicking, and hiking (Nevada Division of State Parks 2007a). Total visitation at Kershaw-Ryan State Park for 2000 was 20,689. In 2006, the total visitation was 28,254. This represents a general increase in visitation at the park of 27 percent over the last 7 years. By comparison, the visitation trend across all Region V parks decreased by 13 percent (Nevada Division of State Parks 2007b).
Spring Valley State Park	Twenty miles east of Pioche via SR-322.	Spring Valley State Park offers water oriented recreation at the 65 acre Eagle Valley Reservoir. Boat launching, picnicking, and camping facilities are available. Other opportunities include hiking, exploring, and touring the historic Ranch House Museum (Nevada Division of State Parks 2007a). Total visitation at Spring Valley for 2000 was 119,959. In 2006, the total visitation was 107,047. This represents a general decrease in visitation at the park of 11 percent over the last 7 years. By comparison, the visitation trend across all Region V parks decreased by 13 percent (Nevada Division of State Parks 2007b).
Valley of Fire State Park	In Clark County approximately 6 miles from Lake Mead and 55 miles northeast of Las Vegas via I-15 and on exit 75.	Valley of Fire is Nevada's oldest and largest state park, dedicated in 1935. The valley derives its name from the red sandstone formations and the stark beauty of the Mojave Desert. Ancient trees and early man are represented throughout the park by areas of petrified wood and 3,000 year-old Indian petroglyphs. Popular activities include camping, hiking, picnicking, and photography. The park offers a full-scale visitor center with extensive interpretive displays. The park is open all year (Nevada Division of State Parks 2007a).

NAME	LOCATION	DESCRIPTION
COUNTY		
White Pine County	Various	Recreational facilities owned and operated by White Pine County include a golf course, tennis courts, numerous ball parks, six town parks, neighborhood parks, a shooting range, a summer swimming hole, and playgrounds. These facilities are located in the city of Ely and the community of McGill. The County also operates the White Pine County Rodeo Grounds and Fairgrounds north of Ely. Additionally, the city of Ely owns and operates the Ghost Train, which is a tourist train operation along the portion of the Nevada Northern Railway from Keystone to McGill Junction.
MULTI-AGENCY		
Camp Success	The Camp is situated at the south end of Duck Creek Valley and lies at an elevation of nearly 9,000 feet.	Camp Success is a facility that is maintained through the joint efforts of White Pine County, the USFS, the Nevada Division of Forestry Honor Camp Program, and volunteers. During the summer, the Camp hosts a variety of events including weddings, reunions, youth groups, outdoor recreation groups, family gatherings, and retreats (White Pine County 2009a).
PRIVATE		
Bassett Lake	Approximately 4 miles northwest of McGill off of US-93.	Originally established in 1942 as a settling pond for mill tailings from local copper mines, it is now owned by the Kennecott Copper Corporation. At capacity, Bassett Lake covers 77 surface acres and has an average depth of 5 feet. Its primary water source is Tailings Creek. It contains northern pike, largemouth bass, and carp. There is a primitive boat ramp; however, no restrooms or overnight camping facilities exist at the lake (NDOW 2007d).
Various	Various	Several private campgrounds and RV parks exist near the project area.

SR – State Route; CR- County Road

3.15 Visual Resources

This section describes visual resources in the project area and the BLM's Visual Resource Management (VRM) System, which is used both to describe existing conditions and to assess potential impacts presented in **Chapter 4**. The section also describes the Key Observation Points (KOPs) that were used to describe existing conditions and assess potential impacts of the Proposed Action and Action Alternative on visual resources.

3.15.1 Area of Analysis

The visual resource project area for the proposed ON Line Project consists of the viewsheds of proposed project facilities, including the Action Alternative. Elements of the project extend from Robinson Summit in the north to the Harry Allen Substation on the south end, a total distance of approximately 236 miles. Also included in the visual project area are locations where the ON Line Project crosses major highways.

3.15.2 Data Sources and Methods

The BLM VRM classifications for the Southern Nevada and Ely Districts were overlain on project maps. Descriptions of existing visual resources were based on field visits.

The levels of visual contrast (related to form, line, color, and texture) between proposed project elements and VRM classes within the project area were considered when describing the affected environment for visual resources.

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3.15.3 Existing Conditions

3.15.3.1 VRM Classes

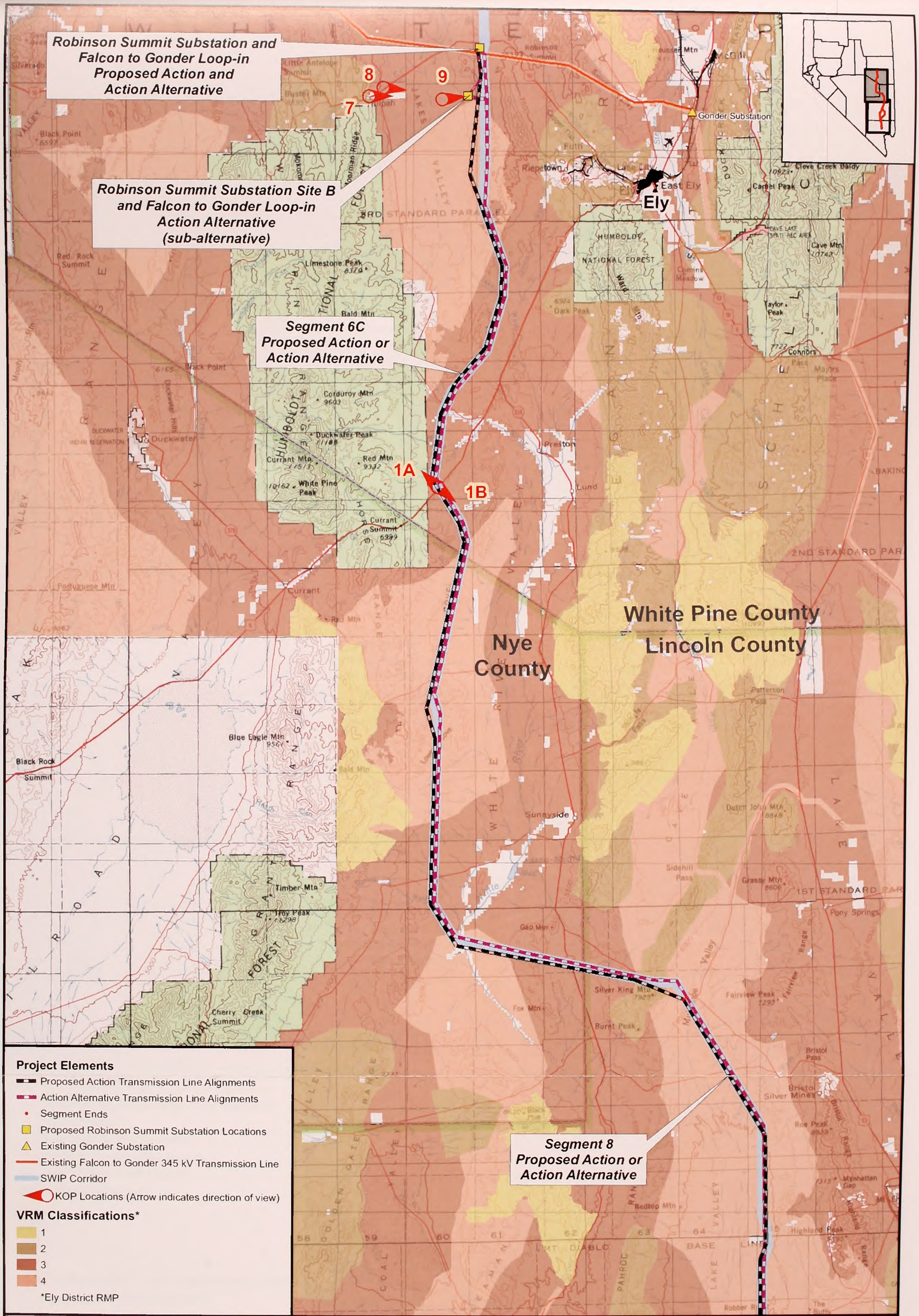
The BLM's VRM system provides a means to evaluate the scenic value of an area's visual resources so that the area can be appropriately managed (BLM 1986a; BLM 1986b; BLM 1998b; BLM 1998c). The VRM system can also be used to analyze potential visual impacts and apply visual design techniques to minimize impacts on the landscape. The VRM system consists of an inventory stage and an analysis stage. The inventory stage involves identifying and inventorying visual resources using BLM's visual resource inventory process. The analysis stage involves rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from representative or selected key travel routes and/or observation points.

A BLM RMP establishes how public lands will be used and managed for different purposes. Visual resources are considered in development of the RMP, and visual resources are assigned one of four VRM classes. Management objectives of the VRM classes are as follows:

- *Class I Objective*. The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- *Class II Objective*. The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- *Class III Objective*. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- *Class IV Objective*. The objective of this class is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Most of the project elements on federal lands fall within the boundaries of the BLM's Ely District. Project elements within the Ely District include those within White Pine, Nye, and Lincoln counties. Project elements south of the Lincoln-Clark County line are within the Southern Nevada District.

Within the Southern Nevada District the VRM classifications surrounding the SWIP Utility Corridor include Class III and Class IV. Within the Ely District, the SWIP Utility Corridor mostly traverses through areas with VRM Class III and Class IV designations. **Figures 3.15-1a – 3.15-1b** depict VRM classes for BLM lands in the project area. The entire SWIP Utility Corridor has been designated VRM Class IV.



Source - Land Status: Bureau of Land Management
Base Map: USGS topographic map of Nevada (scanned from paper copy and georeferenced by R. Hess, University of Nevada Reno).

1:500,000
10 0 10 Miles
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Scale is 1:500,000 when printed at 11"x17"

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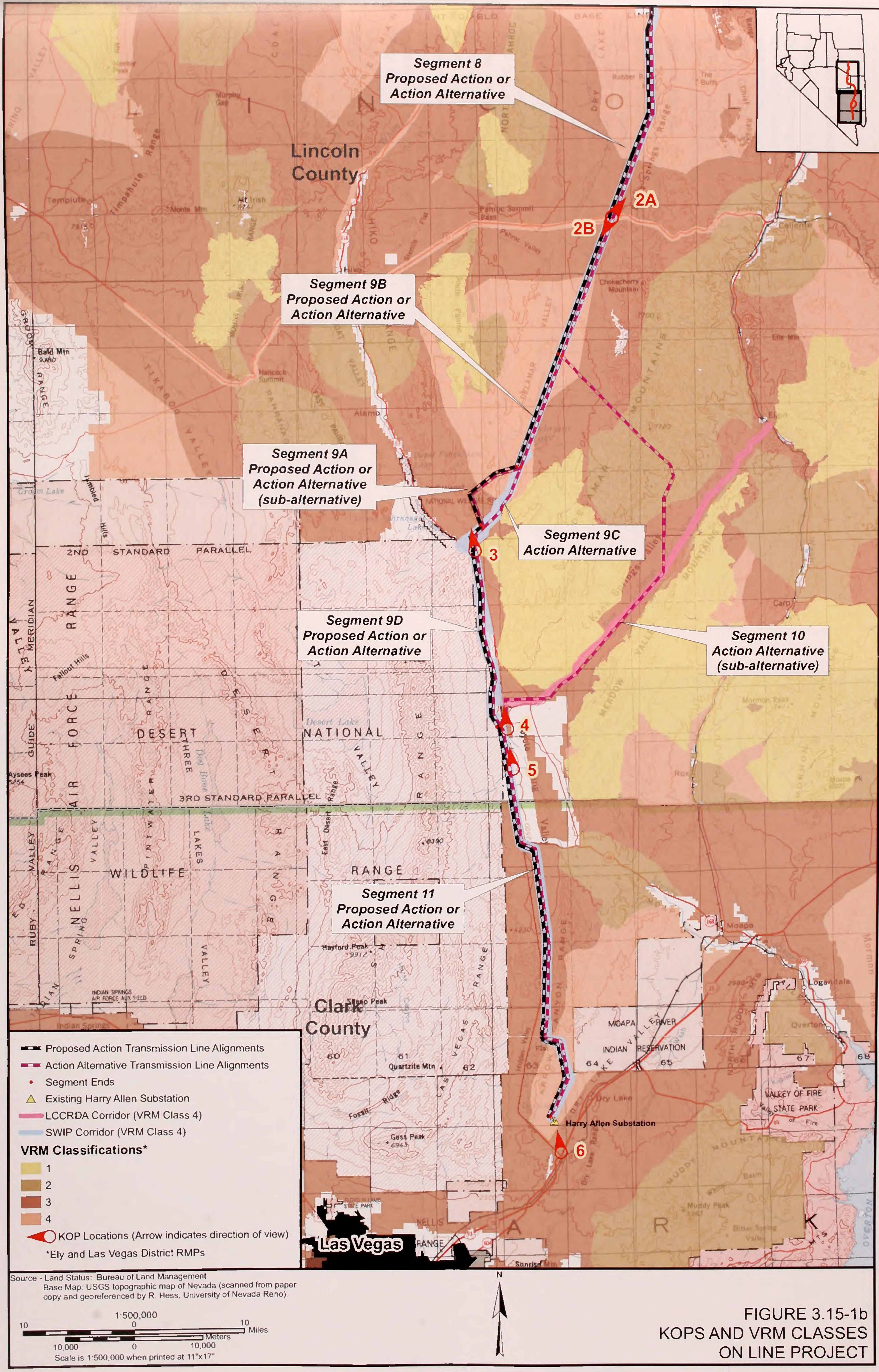
FIGURE 3.15-1a
KOPS AND VRM CLASSES ON LINE PROJECT



Source - Land Status: Bureau of Land Management
Base Map: USGS topographic map of Nevada (scanned from paper copy and georeferenced by R. Hess, University of Nevada Reno).

FIGURE 3.15-1b
KOPS AND VRM CLASSES
ON LINE PROJECT

3.15.3.2 Key Observation Points

Portions of the ON Line Project may be visible from a large area and it is impractical to describe the existing visual conditions and potential project impacts from all important viewing areas. To assist in the description of the existing visual environment and in the assessment of potential project impacts, representative viewing areas called KOPs are selected. KOPs are points on a public travel route or from a public use area where the view of the proposed activity would be most revealing. For this analysis, 9 KOPs were selected throughout the project area. (**Figures 3.15-1a – 3.15-1b**). The KOPs and existing visual condition of the landscape seen from each KOP are described below.

KOP 1A and 1B

KOP 1 is on US-6 about 4 miles northeast of the Nye-White Pine county line where Segment 6C of the Proposed Action and Action Alternative crosses the highway. An angle point just north of the highway allows the crossing to be nearly perpendicular to the highway (**Figure 3.15-1a**). The view to the northwest (KOP 1A) is an expanse of sagebrush-covered valley floor with juniper forest visible at slightly higher elevations behind (**Figure 3.15-2**). Distant mountains mark the limit of visible features. The view to the southeast (KOP 1B) is similar, but the juniper forest cover on the hillside about 2 miles distant is more pronounced (**Figure 3.15-3**). The transmission line would follow the SWIP Utility Corridor, which is designated VRM Class IV.

KOP 2A and 2B

KOP 2 is in east Dry Lake Valley on US-93 at the point where Segment 8 of the Proposed Action and Action Alternative cross the highway. The foreground of the view to the northeast (KOP 2A) is comprised of the highway, a small utility building, and the valley floor (**Figure 3.15-4**). An existing transmission line, which crosses the highway at this location, recedes into the distance. The view to the distant southwest (KOP 2B) is blocked by a hillside, except for a portion of the Burnt Springs Range approximately 1 mile distant (**Figure 3.15-5**). The transmission line alignments would follow the SWIP Utility Corridor, which is designated VRM Class IV.

KOP 3

KOP 3 is on US-93 just south of the Pahranagat National Wildlife Refuge at the point where Segment 9D of the Proposed Action and Action Alternative cross the highway. In the foreground of the view to the north is the highway, with rocky, sparsely vegetated hills behind (**Figure 3.15-6**). The portion of the transmission line that would be visible from KOP 3 is within the SWIP Utility Corridor and designated VRM Class IV. The Refuge is not visible from KOP 3.

Figure 3.15-2 View to the northwest from KOP 1A

Figure 3.15-3 View to the southeast from KOP 1B

Figure 3.15-4 View to the northeast from KOP 2A

Figure 3.15-5 View to the southeast from KOP 2B

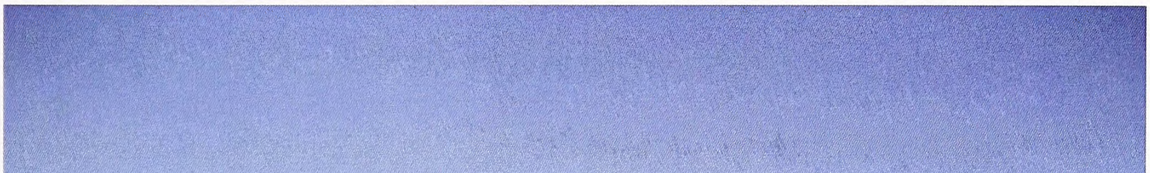


Figure 3.15-6 View to the north from KOP 3

KOP 4

KOP 4 is located on US-93 near Kane Springs Valley Road where Segment 10, a sub-alternative of the Action Alternative, approaches the highway corridor from the east. The view from KOP 4 to the north-northeast is dominated by the highway and an existing H-frame transmission line support structures on the west side of the highway. The valley floor consists of bare ground and shrubs with mountains visible in the distant background (**Figure 3.15-7**). BLM land along the Segment 10 sub-alternative in the valley is designated a mix of VRM Class III and Class IV. The Delamar and Meadow Valley mountains, which are located on the north and south sides of Kane Springs Valley, respectively, are designated VRM Class I and Class II.

KOP 5

KOP 5 is located on US-93 west of the Meadow Valley Mountains where Segment 11 of the Proposed Action and Action Alternative follow the highway corridor. The view from KOP 5 to the north-northwest is dominated by the highway and an existing H-frame transmission line on the west side of the highway (**Figure 3.15-8**). The valley floor is shrub-covered and relatively featureless; mountains are visible in the far distance. The transmission line alignments follow the SWIP Utility Corridor, which is designated VRM Class IV.

Figure 3.15-7 View to the north from KOP 4

Figure 3.15-8 View to the north from KOP 5

KOP 6

KOP 6, which is located at the junction of US-93 and I-15, is the only KOP within the BLM Southern Nevada District boundary. Segment 11 of the Proposed Action and Action Alternative would enter the Harry Allen Substation on the far side from the northeast. A large number of observers pass this KOP because it is a major intersection on the Interstate Highway just outside Las Vegas. The view from KOP 6 to the north-northwest is dominated in the foreground by the highway and transmission line support structures (**Figure 3.15-9**). Dozens of other support structures are visible in the distance and the mountains of the Arrow Canyon Range form a backdrop. The existing substation appears to be hidden from view by a slight rise in the valley floor. The substation and approximately 8 miles of the transmission line are in BLM land designated VRM Class IV. The transmission line alignment then enters Class III designated land as it continues to the north.

Figure 3.15-9 View to the northwest from KOP 6

KOP 7

KOP 7 is located at the west end of Jakes Valley along US-50, looking east across the valley. The RSS-Site B sub-alternative would be located directly east of KOP 7, approximately 8 miles across Jakes Valley. The RSS-Site B sub-alternative location would not be visible to westbound travelers on US-50 at KOP 7. Eastbound vehicles traveling on US-50 would be traveling at lower rates of speed (45 to 50 mph) approaching KOP 7 because the road is winding as it emerges west from the canyon into Jakes Valley. Travelers would be accelerating as they enter the flat, open area of Jakes Valley where the speed limit is 65 mph. Entering Jakes Valley from the west, the view changes from a relatively narrow winding canyon-like setting to an open, spacious valley with views for miles (**Figure 3.15-10**). Viewers at KOP 7 take in the sweeping

views of Jakes Valley, which appears relatively flat in the middle ground and gently rises to the mountain range in the distance. Views from KOP 7 are of VRM Class III areas.

Figure 3.15-10 View to the east from KOP 7

KOP 8

KOP 8 is located on the western side of Jakes Valley, Along US-50, at the intersection with Ruby Lake Road traveling roughly north. The RSS-Site B sub-alternative would be located east-southeast, approximately 7 miles across Jakes Valley. The RSS-Site B sub-alternative location would not be visible to westbound travelers on US-50 at KOP 8. Eastbound travelers on US-50 bound for Ruby Lake would slow or come to a stop before turning onto Ruby Lake Road. Travelers on Ruby Lake Road would come to a stop before turning onto US-50. KOP 8 is located on the valley floor, with views of the proposed alternative substation site at a slightly higher elevation in the distance. The foreground view from KOP 8 is dominated by short grasses and shrubs that become indistinct in the middle ground, with a backdrop of forested mountains in the distance (**Figure 3.15-11**). Views from KOP 8 are of VRM Class III areas.

Figure 3.15-11 View to the southeast from KOP 8

KOP 9

KOP 9 is located along Jakes Valley Road, approximately 4.5 miles south of US-50 and approximately 2 miles directly west of the proposed RSS-Site B sub-alternative. The RSS-Site B sub-alternative location would be visible to both northbound and southbound travelers on Jakes Valley Road at KOP 9. Vehicles traveling on Jakes Valley Road would be traveling at lower rates of speed (up to 40 mph) approaching this KOP because the road is gravel. The view from KOP 9 is of medium sized shrubs and sparse grasses in the foreground (**Figure 3.15-12**). Mottled green colors in the middle ground indicate areas of sage shrub contrasted with areas of winterfat. The valley floor gently rises to forested mountains in the distance. KOP 9 is at a slightly lower elevation than the proposed RSS-Site B sub-alternative location. Views from KOP 9 are of VRM Class III areas.

Figure 3.15-12 View to the east from KOP 9

3.15.4 Specific Project Area Conditions

The Robinson Summit Substation would be located just south of US-50 on undeveloped land. The RSS-Site B sub-alternative is approximately 4 miles south of US-50 on undeveloped lands. The transmission line alignments traverse generally undeveloped and sparsely populated land. The greatest effect on visual resources would occur where the transmission line facilities cross major highways, where they would be viewed by the greatest number of people. The alignments generally are routed around steep terrain and follow valleys typical of the Basin and Range Province. Major highway crossings include US-6 near the White Pine County line, US-93 near the Burnt Springs Range, US-93 south of the Pahranagat National Wildlife Refuge, and US-93 near Kane Springs Wash. Transmission facilities are within the viewshed of KOPs 1 through 6, as described in **Section 3.15.3.2**.

The few portions of segments that are located outside the SWIP Utility Corridor occur within VRM Classes III and IV. One portion of Segment 6C within the SWIP Utility Corridor crosses VRM Class II; however, the SWIP Utility Corridor is designated VRM IV. One portion of the Action Alternative Segment 10 (sub-alternative) occurs within VRM Class II. The proposed Robinson Summit Substation occurs partially within VRM Class III and Class IV. The RSS-Site B sub-alternative would be located within VRM Class III. The Falcon Substation expansion area is on private lands and not subject to VRM classification.

3.16 Noise

Noise is an unwanted sound occurrence. A noise's attributes (pitch, loudness, repetitiveness, vibration, variation, duration, and the inability to control the source) determine how it affects a receptor. The study of noise involves three important characterizing parameters: pressure, power, and intensity. The power of an oscillating sound wave is composed of kinetic and potential energies. The intensity of a sound wave is defined as the average rate at which power is transmitted per cross-sectional area in the direction of travel. Noise versus sound is a subjective measurement, thus a receptor's reaction to sound is a poor measurement of noise.

The Federal Noise Control Act of 1972 established a requirement that all federal agencies administer their programs to promote an environment free of noise that jeopardizes public health or welfare. The U.S. Environmental Protection Agency (EPA) was given responsibility for implementing programs to assess noise and identify acceptable noise impacts.

EPA identifies outdoor noise limits to protect against effects on public health and welfare by an equivalent sound level (L_{eq}), which is an A-weighted average measure over a given time. Outdoor limits of 55 dBA L_{eq} have been identified as desirable to protect against speech interference and sleep disturbance for residential areas and areas with educational and healthcare facilities. Sites are generally acceptable to most people if they are exposed to outdoor noise levels of 65 dBA L_{eq} or less, potentially unacceptable if they are exposed to levels of 65 – 75 dBA L_{eq}, and unacceptable if exposed to levels of 75 dBA L_{eq} or greater (EPA 1981).

The day-night sound level, L_{dn}, (the A-weighted equivalent sound level for a 24 hour period with an additional 10 dB imposed on the equivalent sound levels for night time hours of 10 p.m. to 7 am) in residential areas should not exceed 55 dBA to protect against activity interference and annoyance (EPA 1981). **Table 3.16-1** presents typical sound levels in dBA and subjective descriptions associated with various noise sources.

TABLE 3.16-1 SOUND LEVELS ASSOCIATED WITH ORDINARY NOISE SOURCES

NOISE SOURCE	NOISE LEVEL	SUBJECTIVE DESCRIPTION
Commercial Jet Take-Off	120 dBA	Deafening
Road Construction Jackhammer	120 dBA	Deafening
Busy Urban Street	90 dBA	Very loud
Standard For Hearing Protection 8-Hour Exposure Permissible Exposure Limit (PEL) (MSHA) Action Level within Active Mining Facilities	90 dBA 85 dBA	Very loud Loud - to very loud
Construction Equipment at 50 feet	80-75 dBA	Loud
Freeway Traffic at 50 feet	70 dBA	Loud
Noise Mitigation Level for Residential Areas Federal Housing Administration (FHA)	67 dBA	Loud
Normal Conversation at 6 feet	60 dBA	Moderate
Noise Mitigation Level for Undisturbed Lands (FHA)	57 dBA	Moderate
Typical Office (interior)	50 dBA	Moderate
Typical Residential (interior)	30 dBA	Faint

Source: Federal Highway Administration Highway Construction Noise Handbook 2006

There are no State of Nevada noise standards directly applicable to this project. State code gives county and city governments the right to implement noise impact restrictions.

3.16.1 Area of Analysis

To properly assess the sound levels affecting any area, an explanation of sound effects, consideration of the topography, climate, flora, and current ambient sound is required. The dry climate and low, desert vegetation dominating the majority of the project area are generally favorable to noise propagation. Wind, and where present traffic, typically dominate the sound profile in all areas except those in close proximity to the few man-made noise source in the project area. Noise propagation is enhanced in the direction of the wind, which is typically channeled by the surrounding terrain. Nearby terrain could cause reflection or echoing of sound. For wildlife, the affected environment for noise impacts is usually limited to a distance of 880 yards (2,640 feet) from the source based on current wildlife studies (Fletcher 1980). However, if residential housing has the potential to be impacted, the affected environment includes the distance from the source of the noise to the residence.

3.16.2 Data Sources and Methods

Background (ambient) sound levels recorded in May 2007 at receptor sites in locations potentially impacted by noise from the then proposed EEC Project were used to document the expected range of existing noise levels in the project vicinity. Sound measurements were taken using the EXTECH 407780 Integrating Sound Level Meter. This meter meets the ANSI Standard S1.4 for sound level measurements. Measurements were recorded at each site using an A-weighted average measure in decibels (dBA) with a slow time weighting of 1 second. The duration of the measurements was 15 minutes. Measurements were taken for the equivalent sound level (L_{eq}). Maximum (L_{max}) and minimum (L_{min}) sound levels were also recorded.

3.16.3 Existing Conditions

The primary sources of noise currently observed in the project area are typically associated with natural conditions, especially wind. Existing noise levels are generally low intensity away from traffic corridors, estimated to average between 30 and 35 dBA based upon the measurements taken in the Steptoe Valley. Noise associated with vehicle traffic currently occurs along US-50, US-93, US-6, and SR-318 within some areas near or along the ON Line Project. Traffic impacts contribute to only slightly higher background noise levels along smaller or less traveled roadways, but are believed to bring average noise levels to the 40 to 50 dBA range along US-93 based upon Steptoe Valley readings that were in that range for open areas with comparable traffic volumes and higher in urban areas or areas with more highway traffic.

Noise generally propagates by line of sight, more strongly with the wind than across or against the wind flow, though strong wind can produce enough noise to drown out other sounds. The thin, dry air associated with higher elevation dry climate areas such as the project area, especially on the northern end, results in effective noise transmission, whereas humidity or higher air pressure associated with lower elevation would dampen sound transmission. Physical impediments including structures, terrain features, or mountains tend to block or attenuate sound transmission.

Generally, existing sound levels are estimated to be 35 dBA or less in rural areas away from communities and roads with any significant traffic volume, which dominate the proposed project area. Within a rural community, the man-made noise level range from 45 dBA to 52 dBA (EPA 1981). Steptoe Valley measurements in 2007 confirm maximum background sound levels in that range, primarily in areas considerably more developed than anywhere in the proposed project area. Those levels would be expected to represent the maximum background sound levels in the most densely developed areas across the project area.

The ON Line Project is mainly within the SWIP Utility Corridor, which is at least 1 mile from any occupied residence or area of regular human activity.

Noise levels were measured along US-50 west of Robinson Summit, where it enters the basin providing an estimate of background noise levels at the northern terminus of the proposed transmission line and the proposed Robinson Summit Substation. Noise levels (L_{eq}) measured there mid-day in May 2007 were 31 dBA. That site is a local high point that features some localized noise reflection or retention from surrounding terrain, but generally would disperse noise above and away from populated areas. That same sound dispersion profile would prevail at the limited areas along the proposed transmission line, which are along ridges, going over local passes, or in other ways not bounded by surrounding valley walls. In the valley bottoms that dominate the transmission line alignment, and at the Falcon Substation, sound transmission would be bounded by the surrounding terrain, and favored in the downwind direction. At the RSS-Site B sub-alternative, the Egan Range is on the east and north with Jakes Valley opening up to the west.

3.17 Socioeconomics

3.17.1 Area of Analysis

The area that would be affected by the ON Line Project lies in eastern Nevada and includes White Pine, Nye, Lincoln, and Clark counties, Nevada (as shown on **Figure 2.2-1**). The southern terminus of the transmission line would be located at the existing Harry Allen Substation in Clark County. The site for the Falcon Substation expansion is in Eureka County located about mid-way between Carlin and Battle Mountain, Nevada, north of I-80.

The area of analysis is the primary area of socioeconomic effect, which would be in White Pine and Lincoln counties. Effects in Eureka, Nye, and Clark counties would be negligible due to the relatively limited construction that would occur in those counties. In addition, the economy of Clark County is so much larger than that of the other counties that adding it to the detailed discussion would risk understating the potential effects to White Pine and Lincoln counties.

3.17.2 Data Sources and Methods

The social and economic factors associated with the project are described below. Factors examined include economic setting, population and demographics, employment and income, land ownership, agriculture, housing, community services (education, law enforcement, fire protection, health care, water supply), local government finances, housing, agriculture, and the electric power industry.

Primary published data sources used to characterize this region included the United States Bureau of the Census (2000 a, b, c, and d), the Bureau of Economic Analysis (2007a), state employment agencies, the Western Electricity Coordinating Council (WECC 2006), and the Energy Information Administration (EIA 2006a and b).

3.17.3 Existing Conditions

3.17.3.1 Economic Setting

White Pine County

White Pine County has historically been dependent on mining, with ranching playing a secondary role in the area's economy. Several different pioneer trails and the Pony Express traversed the area before permanent settlement occurred. A group of prospectors from Austin, Nevada founded the White Pine Mining District in 1865. Numerous mining camps were established, but most quickly played out. Mining in Ely initially focused on gold and silver, while later investments developed around copper mining. The White Pine Copper Company was capitalized with $500,000 in 1902 and consolidated a group of claims. The Guggenheim family took over the White Pine Copper Company with the Nevada Consolidated Copper Company in 1906. In 1933, Kennecott Copper Company took over the mining operations at Ruth and the concentrator and smelter complex at McGill. The Nevada Northern Railway was built in 1906 as a means to move ore from the mines in Ruth through Ely to the smelter in McGill. The concentrator and smelter products were then transported north from McGill to the Transcontinental Railroad.

While mining has been the backbone of the White Pine County economy, agriculture developed to supply the mining camps and sustained the area during downturns in mining. The primary agricultural activity has been grazing, although at various times hay, potatoes, and grain have been grown. The relatively high elevation of east-central Nevada (Ely is at an elevation of 6,435 feet) precluded growing fruit and tender vegetables. With large amounts of open land, ranching continues to be part of the White Pine County economy (Ellen and Glass 1983; Castleman 1995).

In 1978, falling copper prices coupled with overseas copper production and tighter environmental regulations lead to Kennecott closing the copper mine and significantly cutting employment at the smelter. Layoffs continued until the smelter closed in 1982, and freight service on the Nevada Northern Railway was curtailed in 1983. The closure of the Kennecott copper operations resulted in decreasing population, high unemployment, closure of businesses, and loss of tax revenues. Prior to 1978, the Kennecott operations in White Pine County were responsible for 20 percent of Nevada's total net proceeds of mines tax. After the closure of the copper operations, White Pine County generated only 2 percent of the net proceeds of mines tax in Nevada. The area's economy continued to decline during the mid 1980s although there was a slight upturn in tourism and a small amount of oil and gas exploration.

Rising metal prices during the late 1980s resulted in an upturn in the White Pine County economy. Mining employment reached almost 1,100 with 13 active mines in the area. Alta Gold employed over 600 persons at its East Robinson project. During this time, the state constructed a prison near Ely and hired 370 persons. The mining boom resulted in high wages in the area and made it difficult for other businesses to attract workers. In the early 1990s, the mining industry experienced another downturn and White Pine County lost 700 mining jobs between 1989 and 1992. Local businesses experienced a 10 to 20 percent decline in taxable sales. By 1994, the unemployment rate in White Pine County reached 12.8 percent as unemployed miners remained in the area while waiting for Magma Nevada Mining Company to receive permits to reopen the Robinson operation. Magma commenced construction at the Robinson operation in 1995 and employed a temporary workforce of 750. As a result, housing was in short supply in Ely and workers stayed in local hotels and motels. The mine started production in

1996, and Magma was subsequently purchased by BHP Minerals of Australia (BHP). The reopening of the Robinson project and several other mines in the area resulted in a labor shortage; the state prison near Ely continually reported 50 to 70 job openings.

World copper prices declined in 1998, and on June 28, 1999, BHP announced that the Robinson operation was being placed in "Care and Maintenance" status and laid-off 433 of the mine's 450 workers. Simultaneously, Alta Gold declared bankruptcy and closed two mines in White Pine County. The mine closures represented 13 percent of the labor force in White Pine County and 24 percent of the annual payroll. School enrollments dropped by 12 percent, and taxable sales in White Pine County declined by 37 percent. The value of new homes constructed for the BHP workforce also dropped by 27 percent. Declining tax revenues severely impacted government services, forcing layoffs of government employees and curtailment of nonessential services such as recreation and libraries.

As housing prices in White Pine County declined, the housing market became more active. Homes were purchased for retirement and as second homes, primarily by residents of Clark County, Nevada.

The energy crisis in California during 2000 drew interest to White Pine County as the possible site of electric generating stations. The County entered discussions with both Pacific Gas and Electric and Duke Energy. Although both companies dropped development plans by 2002, the area's economy started to rebound with small manufacturing plants moving to White Pine County. Housing prices doubled over their 1999-2000 values, and real estate agents noted a lack of housing stock. At the end of 2003, LS Power Development of St. Louis, Missouri expressed interest in White Pine County as the site of a coal-fired power plant. White Pine County entered into a development agreement with LS Power in February 2004 and the company commenced with permitting of the plant. In early 2006, NV Energy announced plans to construct the EEC in White Pine County.

Mining continues to be important to the local economy. Quadra Mining of Vancouver, British Columbia purchased the Robinson Pit from BHP in April 2004 and within a year was at full production with 500 employees (White Pine County 2006).

Lincoln County

Lincoln County was settled by the incongruous mix of miners and settlers from Utah who were members of the Church of Jesus Christ of Latter-day Saints (LDS). With the exception of the 1849 Death Valley Jayhawkers, few persons of European ancestry visited the area until a group of LDS missionaries visited in 1857. They engaged in farming in Meadow Valley until called back to present-day Utah the next year. In 1864, mining commenced for silver in the Meadow Valley Mining District. During the same year, members of the LDS church settled Panaca and Eagle Valley. Ore was discovered at Pioche during the 1860s and Pioche was declared the county seat. The county issued $25,000 worth of bonds to construct a courthouse, but county revenues sufficient to service the debt did not develop. The county was forced to issue scrip in lieu of cash for salaries and other expenses to service the courthouse debt. During the 1880s and 1890s, the county was forced to suspend public schools due to lack of funds. The original bonds for $25,000 were eventually paid off in 1938 at a total cost of $800,000.

Pioche suffered the boom-bust cycles typical to mining towns. Electric power from Hoover Dam arrived during the 1930s. Low-cost power coupled with demand for minerals developed by World War II resulted in the area's mines reopening during the war. There was a similar mining boom during the Korean War. Caliente, the only incorporated city in the county, originated as a division point on the Union Pacific Railroad on the line from Salt Lake City to Las Vegas and Los

Angeles. In contrast to the often haphazard development of mining towns, Caliente was planned and has always had an orderly atmosphere (Ellen and Glass 1983; Castleman 1995). While Lincoln County has had a stable economy for the past several decades, the recent development of Coyote Springs may drastically alter the county's future. Coyote Springs is a 65-square-mile, unincorporated master-planned community being developed on the Clark County-Lincoln County line. About two-thirds of the development is in Lincoln County and one-third in Clark County, although the initial development is occurring in Clark County. The project was announced in 1998, and construction of the first golf course commenced in 2005. An official groundbreaking was held in July of 2006. The plans call for an eventual population of 150,000 persons after a 25 to 50 year build out (Reid 2006).

3.17.3.2 Population and Demographics

White Pine and Lincoln counties are rural and sparsely populated. White Pine County is the most populous of the two, containing roughly 65 percent of the combined estimated population in 2006. (**Table 3.17-1**). Together the populations of White Pine and Lincoln counties accounted for just 0.54 percent of the estimated population of Nevada in 2008.

TABLE 3.17-1 POPULATION IN THE TWO-COUNTY AREA

	2000	2002	2004	2006	2008
State of Nevada	2,018,244	2,164,518	2,323,875	2,484,196	2,600,167
Lincoln County	4,172	4,193	4,193	4,525	4,898
White Pine County	9,028	8,553	8,429	9,063	9,199
Total Lincoln and White Pine	13,200	12,746	12,628	13,588	14,097

Source: U.S. Bureau of the Census 2000a, b, c, and 2008
Note: Mid-year estimates are made as of July 1 and vary from the decennial census counts that are as of April 1.

According to 2000 Census data, all of Lincoln County and 53.2 percent of White Pine County is considered rural (**Table 3.17-2**). The urbanized population in White Pine County is largely due to population concentrations in the city of Ely (Bureau of the Census 2000b).

TABLE 3.17-2 GENERAL URBAN AND RURAL POPULATION

	STATE OF NEVADA	LINCOLN COUNTY, NV	WHITE PINE COUNTY, NV
Population	1,998,257	4,165	9,181
Urban	91.5%	0.0%	46.8%
Rural	8.5%	100.0%	53.2%

Note: Data are Census 2000 enumerated population.
Source: Bureau of the Census 2000d

The Nevada State Demographer's Office also prepares annual population estimates for counties, cities, and selected unincorporated areas in Nevada, as listed in **Table 3.17.3**.

TABLE 3.17-3 DETAILED URBAN AND RURAL POPULATIONS CERTIFIED 2008 ESTIMATES

COUNTY	INCORPORATED CITIES	POPULATION
Lincoln County	**Population 4,352**	
Incorporated City		
	Caliente	1,077
Unincorporated Areas		
	Alamo	464
	Panaca	645
	Pioche	785
White Pine County	**Population 9,694**	
Incorporated City		
	Ely	4,352
Unincorporated Areas		
	Lund	157
	McGill	1,128
	Ruth	407

Source: Nevada State Demographer's Office 2009

Population projections by the Nevada State Demographer's Office show modest increases in the population of both White Pine and Lincoln counties over the next 17 years (**Table 3.17-4**). These are recent projections and take into account current economic conditions in the state. (Nevada State Demographers Office 2009).

TABLE 3.17-4 POPULATION PROJECTIONS TO 2025

DESCRIPTION	2010	2015	2020	2025
State of Nevada	2,963,812	3,321,189	3,619,563	3,872,937
Lincoln County	4,499	4,988	5,308	5,449
White Pine County	10,457	10,990	11,081	11,265

Source: Nevada State Demographer's Office 2009

The two counties are relatively uniform demographically (**Table 3.17-5**). White Pine County is 86.3 percent white and the second largest racial group is black accounting for 4.1 percent of the population. Lincoln County is over 90 percent white with the second most commonly cited category being "two or more races". Hispanics, who may be of any race, comprise 11 percent of White Pine County and 5.3 percent of Lincoln County. As is common in western mining areas, a variety of ethnic groups immigrated to White Pine County during the late 1800s and early 1900s. Primary ethnic groups were Basque, Slavic, Greek, Italian, Japanese, and Chinese. Language barriers separated groups, and neighborhoods in McGill received names such as Greek Town and Slav Town.

TABLE 3.17-5 RACE AND ETHNICITY IN NEVADA AND THE TWO-COUNTY AREA, 2000

	STATE OF NEVADA	LINCOLN COUNTY, NV	WHITE PINE COUNTY, NV
Population	1,998,257	4,165	9,181
White	75.2 %	91.3%	86.3%
Black	6.8%	1.8%	4.1%
Native American	1.3%	1.8%	3.3%
Asian	4.5%	0.3%	0.8%
Pacific Islander	0.4%	0.0%	0.2%
Some Other Race	6.0%	2.7%	3.1%
Two of More Races	3.8%	1.9%	2.1%
Hispanic, Origin of Any Race	19.8%	5.3%	11.0%

Source: Bureau of Census 2000e. Note: The Bureau of Census reports Hispanic as an ethnicity, not a race. The percentages reported here are relative to the total population numbers for the seven census groups, and should not be added to the total.

The majority of the households in both counties are family households (**Table 3.17-6**). The Bureau of the Census defines a family as consisting of a householder and one or more other people living in the same household who are related to the householder by birth, marriage, or adoption. Households that consist of a group of unrelated people or one person living alone are considered non-family households. Lincoln and White Pine counties each have slightly less than the state average of 66.3 percent family households. Similarly, in both Lincoln and White Pine counties, the average household size is less than the state average of 2.62 persons per household (Bureau of Census 2000l). These differences may be attributed to people living in institutions (e.g., correctional institutions, nursing homes, or dormitories); variation in age distribution (e.g., widows or widowers among older populations); or other factors (Simmons and O'Neill 2001).

TABLE 3.17-6 HOUSEHOLD TYPE, 2000

	STATE OF NEVADA	LINCOLN COUNTY, NV	WHITE PINE COUNTY, NV
Households	751,165	1,540	3,282
Family Households	66.3%	65.6%	65.8%
Non-family Households	33.7%	34.4%	34.2%
Persons/Household	2.62	2.48	2.42

Source: Bureau of the Census 2000f

3.17.3.3 Employment and Income

The civilian labor force in both counties has been increasing slightly since 2000 (**Table 3.17-7**). In Lincoln County, the civilian labor force increased from 1,655 in 2000 to 1,830 in 2008; however, the unemployment rate increased as well from 5.0 percent to 5.4 percent during the same period. The civilian labor force in White Pine County increased from 3,769 in 2000 to 4,801 in 2008. Unemployment also increased from 4.2 percent in 2000 to 4.7 percent in 2008.

TABLE 3.17-7 LABOR FORCE AND UNEMPLOYMENT SELECTED YEARS

DESCRIPTION	2000	2005	2006	2007	2008
STATE OF NEVADA					
Civilian Labor Force	1,062,845	1,225,144	1,277,197	1,322,643	1,373,462
Employment	1,015,221	1,170,367	1,222,183	1,260,276	1,282,012
Unemployment	45,624	54,777	55,014	62,367	91,450
Unemployment Rate	4.5%	4.5%	4.3%	4.7%	6.7%
LINCOLN COUNTY, NEVADA					
Civilian Labor Force	1,655	1,566	1,601	1,713	1,830
Employment	1,573	1,481	1,523	1,637	1,731
Unemployment	82	85	78	76	99
Unemployment Rate	5.0%	5.4%	4.9%	4.4%	5.4%
WHITE PINE COUNTY, NEVADA					
Civilian Labor Force	3,769	4,309	4,444	4,719	4,801
Employment	3,611	4,126	4,270	4,539	4,576
Unemployment	158	183	174	180	225
Unemployment Rate	4.2%	4.2%	3.9%	3.8%	4.7%

Source: Bureau of Labor Statistics 2008

Changes in employment by industry for Lincoln and White Pine counties over the past several decades indicate that the economic structure of the area is changing (**Table 3.17-8**). Employment growth has been slow, rising by just 9.6 percent from 5,495 in 1970 to 6,020 in 2000. The largest employment shift has been in the mining sector. In 1970, mining accounted for 23.7 percent of all full-time and part-time employment. By 2000, mining's share had dropped to just 4.3 percent, representing an absolute loss of 1,045 jobs. Other sectors that lost jobs and share include manufacturing (-334 jobs) and transportation and public utilities (-112 jobs). The sector posting the largest gain was government, which increased from 1,048 jobs in 1970 to 1,991 jobs in 2000. Services also grew from 683 jobs in 1970 to 920 jobs in 2000.

TABLE 3.17-8 EMPLOYMENT BY INDUSTRIAL SECTOR IN THE TWO-COUNTY AREA, 1970, 1980, 1990, 2000

EMPLOYMENT BY INDUSTRY				
	1970	1980	1990	2000
Total Full-time and Part-time Employment	5,495	5,875	7,397	6,020
Wage and Salary Employment	4,640	4,936	6,219	4,737
Proprietor's Employment	855	939	1,178	1,283
Farm Employment	341	394	389	339
Mining	1,302	650	968	257
Construction	163	386	322	245
Manufacturing	409	358	48	75
Transportation and Public Utilities	275	299	252	163
Wholesale Trade	125	79	190	ND
Retail Trade	944	1,065	1,188	1,048
Finance, Insurance and Real Estate	181	206	198	268
Services	683	1,231	874	920
Government	1,048	1,193	1,709	1,991
EMPLOYMENT BY INDUSTRY, PERCENT				
	1970	**1980**	**1990**	**2000**
Total Full-time and Part-time Employment	100.0	100.0	100.0	100.0
Wage and Salary Employment	84.4	84.0	84.1	78.7
Proprietor's Employment	15.6	16.0	15.9	21.3
Farm Employment	6.2	6.7	5.3	5.6
Mining	23.7	11.1	13.1	4.3
Construction	3.0	6.6	4.4	4.1
Manufacturing	7.4	6.1	0.6	1.2
Transportation and Public Utilities	5.0	5.1	3.4	2.7
Wholesale Trade	2.3	1.3	2.6	--
Retail Trade	17.2	18.1	16.1	17.4
Finance, Insurance and Real Estate	3.3	3.5	2.7	4.5
Services	12.4	21.0	11.8	15.3
Government	19.1	20.3	23.1	33.1

ND: Not Disclosed
Notes: May not sum to the total due to exclusion of several minor categories. Industry aggregations are based on the Standard Industrial Classification System (SICS).
Source: Bureau of Economic Analysis, Regional Economic Information System 2007a

Employment by industry as of 2007 is shown in **Table 3.17-9**. As shown there, government is still a major employer in both counties. Government accounts for roughly 30 percent of employment in Lincoln County and 28 percent of employment in White Pine County.

Much of the employment by industry data is suppressed in Lincoln County to prevent disclosure of individual company data. Available data show that, after government, the largest industrial sector is retail trade with 13.0 percent of total employment, followed by professional/scientific/technical services, which account for 11.9 percent of all jobs in the county.

The largest industrial sector in White Pine County (apart from the government sector), as measured by employment is accommodations/food service which employs 10.7 percent of the county's workers. Retail trade is responsible for 10.1 percent of all jobs in White Pine County.

TABLE 3.17-9 EMPLOYMENT BY INDUSTRIAL SECTOR IN THE TWO-COUNTY AREA, 2007

INDUSTRY	LINCOLN COUNTY	WHITE PINE COUNTY
Total employment	2,182	5,233
Wage and Salary Employment	1,479	4,170
Proprietor's Employment	703	1,063
Farm Employment	144	170
Forestry, fishing, and other	D	D
Mining	28	D
Utilities	D	D
Construction	D	272
Manufacturing	D	64
Wholesale Trade	D	77
Retail Trade	284	528
Transportation and Warehousing	64	D
Information	30	48
Finance and Insurance	57	105
Real Estate and Rental and Leasing	103	139
Professional and Technical Services	260	D
Management of Companies and Enterprises	18	D
Administrative and Waste Services	57	215
Educational Services	L	D
Health Care and Social Assistance	60	D
Arts, Entertainment, and Recreation	D	61
Accommodation and Food Services	D	560
Other Service, Except Public Administration	D	202
Government	656	1,480

D: Not disclosed to avoid revealing individual company data. L: Less than 10 jobs, but the estimates for this item are included in the totals.
Notes: May not necessarily agree with data reported by state employment agencies. Industry aggregations are based on the North American Industry Classification System (NAICS).
Source: Bureau of Economic Analysis, Regional Economic Information System 2007a

Major employers in Lincoln County are Computer Sciences Corp., Lincoln County School District, Lincoln County Government, Nevada Division of Child and Family Services, and Grover C. Dils Medical Center (Nevada Department of Employment, Training, and Rehabilitation 2007).

Major employers in White Pine County are Robinson Nevada Mining Company, Nevada Department of Corrections, White Pine County School District, William Bee Ririe Hospital, Bald Mountain Mine, Nevada Hotel and Gambling Hall, White Pine County Government, and the Bureau of Land Management (Nevada Department of Employment, Training, and Rehabilitation 2007).

White Pine County has the highest average annual wage of the subject counties (**Table 3.17-10**). From 2000 to 2007, White Pine County's average annual nonagricultural wage increased 40 percent from $29,133 to $40,962. During the same period, the average annual wage in Lincoln County increased 9.1 percent from $31,192 to $34,033.

TABLE 3.17-10 TWO-COUNTY AREA PERSONAL INCOME, SELECTED YEARS

DESCRIPTION	2000	2002	2003	2005	2007
Average Annual Wage ($)					
State of Nevada	32,276	33,993	35,329	38,763	42,149
Lincoln County, NV	31,192	35,329	31,616	32,242	34,010
White Pine County, NV	29,133	30,522	30,837	34,583	40,951
Nonagricultural Payroll ($ 1,000)					
State of Nevada	32,853,744	35,523,581	38,144,531	47,127,201	54,140,309
Lincoln County, NV	42,382	49,167	38,969	40,856	47,195
White Pine County, NV	91,587	95,339	93,699	131,106	166,231
Total Personal Income ($ 1,000)					
State of Nevada	61,427,864	66,632,084	71,183,270	90,018,074	101,798,979
Lincoln County, NV	77,548	83,314	86,753	96,430	103,850
White Pine County, NV	219,655	220,126	226,586	290,894	338,748
Per Capita Personal Income ($)					
State of Nevada	30,436	30,84	31,866	37,481	39,853
Lincoln County, NV	18,588	19,870	20,597	22,198	21,988
White Pine County, NV	24,330	25,737	26,847	33,067	37,176

Source: Average Annual Wage and Nonagricultural payroll: Bureau of Labor Statistics 2007; Average Total Personal Income and Per Capita Personal Income: Bureau of Economic Analysis, Regional Economic Information System 2007a

Based on 2000 Census data, White Pine County has the higher median household income, followed by Lincoln County (**Table 3.17-11**). Similarly, Lincoln County has the fewest number of households in the higher income brackets, and the highest number in the lower income brackets. Both counties have median household incomes that are lower than the state average of $44,581.

In White Pine County, Ely has a median household income of $36,408 and the McGill CDP has a median household income of $32,039. The City of Caliente, in Lincoln County, has a median household income of $25,833 (Bureau of the Census 2000g).

TABLE 3.17-11 DISTRIBUTION OF HOUSEHOLD INCOME, 1999

DESCRIPTION	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
Households	751,977	1,556	3,285
Less than $10,000	7.2%	17.6%	12.2%
$10,000 - $14,999	5.2%	7.7%	6.0%
$15,000 - $24,999	12.3%	16.1%	14.6%
$25,000 - $34,999	13.1%	10.1%	13.5%
$35,000 - $49,999	18.1%	15.1%	18.3%
$50,000 - $74,999	21.7%	22.4%	22.9%
Greater than $75,000	22.4%	11.0%	12.5%
Median Household Income	$44,581	$31,979	$36,688

Source: U.S. Bureau of the Census 2000g

Since 1999, the median household income in White Pine County has increased from $36,688 to an estimated $39,420 in 2004, an increase of 7.4 percent (**Table 3.17-12**). Median household income in Lincoln County rose by 19.5 percent to $38,226 (Bureau of the Census 2007a).

TABLE 3.17-12 MEDIAN HOUSEHOLD INCOME ESTIMATES, 2000-2007

YEAR	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
2000	$44,698	$34,456	$37,038
2001	$44,325	$33,387	$36,651
2002	$44,560	$34,758	$36,793
2003	$45,249	$36,160	$36,765
2004	$47,231	$38,226	$39,420
2005	$49,288	$37,291	$40,050
2006	$52,800	$42,022	$44,790
2007	$54,996	$44,450	$50,934

Source: Bureau of the Census 2007b

Personal income in the two-county area is concentrated in White Pine County, with 76.5 percent of the personal income, a moderately larger share than the population distribution between the two counties (**Table 3.17-13**).

TABLE 3.17-13 PERSONAL INCOME BY SOURCE ($1,000), 2007

INDUSTRY	LINCOLN COUNTY	WHITE PINE COUNTY
Total Personal Income	103,850	338,748
Dividends, interest and rent	14,945	38,297
Transfer Payments	26,937	51,020
Proprietors income	7,338	11,517
Farm Earnings	2,039	202
Forestry, fishing, and other	D	D
Mining	D	D
Utilities	D	D
Construction	D	8,551
Manufacturing	D	1,690
Wholesale Trade	D	2,885
Retail Trade	4,607	11,127
Transportation and Warehousing	2,858	D
Information	1,337	1,600
Finance and Insurance	1,586	3,333
Real Estate and Rental and Leasing	412	1,782
Professional and Technical Services	14,700	D
Management of Companies and Enterprises	0	D
Administrative and Waste Services	643	4,601
Educational Services	L	D
Health Care and Social Assistance	1,210	D
Arts, Entertainment, and Recreation	D	2,052
Accommodation and Food Services	D	11,233
Other Service, Except Public Administration	D	4,292
Government	32,892	91,116

D: Data suppressed to avoid revealing individual company data. L: Less than $50,000, but the estimates for this item are included in the totals.
Source: Bureau of Economic Analysis, Regional Economic Information System 2007a

Lincoln County's sources of personal income are highly concentrated, indicating a less diversified economy. Government accounts for 31.7 percent of all personal income in the county, followed by transfer payments (25.9 percent), dividends, interest and rent (14.4 percent), and retail trade (14.1 percent).

In White Pine County, the largest source of personal income in White Pine County is government (26.9 percent) followed by transfer payments (15.1 percent) and dividends, interest, and rent (11.3 percent).

3.17.3.4 Land Ownership

The two counties are contiguous. White Pine County borders Lincoln County on its southern end. White Pine County is bordered on the east by the State of Utah and by Eureka and Nye counties on the west and southwest. Lincoln County is bordered on the east by the states of Utah and Arizona, on the west by Nye County, and on the south by Clark County. The federal government is a significant landowner in each of the counties (**Table 3.17-14**). Federal entities administer more than 90 percent of the land in both Lincoln and White Pine counties.

Lincoln County contains 54 percent of the area of the two counties. More than 98 percent of the land in Lincoln County is administered by federal agencies, and 93.5 percent of the land in White Pine County is controlled by the federal government.

Also see **Section 3.12,** for additional descriptions of land use in the project area.

TABLE 3.17-14 LAND OWNERSHIP

DESCRIPTION	LINCOLN COUNTY, NV	WHITE PINE COUNTY, NV
Acres	6,816,000	5,699,200
Federal	98.29%	93.53%
Indian Reservation	0.0%	1.24%
State Government	0.28%	0.16%
Local Government and Private	1.43%	5.07%

Source: Harris et al. 2001

3.17.3.5 Agriculture

The area is known for its ranching heritage and ranching influenced lifestyles in the two-county region. In 2007, the value of agricultural production in Lincoln County totaled $15.3 million. The value of agriculture production in White Pine County totaled $15.1 million (**Table 3.17-15**).

TABLE 3.17-15 VALUE OF AGRICULTURAL PRODUCTION, 2007

DESCRIPTION	LINCOLN COUNTY	WHITE PINE COUNTY
Value of Production ($1,000)	15,339	15,172
Crops	7,690	4,336
Livestock	7,649	10,836

Source: National Agricultural Statistics Service 2007

The average farm in Lincoln County had net cash income of $21,063 in 2007 (**Table 3.17-16**). Average farm income for White Pine County was $32,131. Collectively, the counties contained 195 farms in 2007 (defined as those with sales of agricultural products of $1,000 or more during 2007). In Lincoln County, 37.8 percent of those engaged in farming had a principal occupation

other than farming while 67.4 percent worked at least one day off the farm and 32.7 percent worked more than 200 days off the farm. In White Pine County, 49.5 percent of those engaged in farming had a principal occupation other than farming, 60.0 percent worked at least one day off the farm, and 40.0 percent worked more than 200 days off the farm. (National Agricultural Statistics Service 2007). While ranching plays a large role in the identity and lifestyle of the area, outside employment off the farm is usually necessary to augment farm income.

TABLE 3.17-16 AGRICULTURAL ECONOMICS, 2007

	LINCOLN COUNTY	WHITE PINE COUNTY
Number of Farms	98	97
Average Size (acres)	472	D
Average Cash Income (net)	$21,063	$32,131
Sales less than $10,000	45%	38%
Operators Principal Occupation is other than Farming (%)	37.8%	49.5%
% of Operators Who Work off the Farm	67.4%	60.0%
% of Operators Who Work more than 200 days off the Farm	32.7%	40.0%

Source: National Agricultural Statistics Service 2007
D: not disclosed

3.17.3.6 Housing

The housing occupancy rate in White Pine County was 73.9 percent according to the 2000 Census, slightly higher than the 70.7 percent for Lincoln County. (**Table 3.17-17**). In both White Pine County and Lincoln County, a significant percentage of the housing units are for seasonal, recreational, or occasional use. Housing occupancy for White Pine County will not be measured again until the 2010 Census. The White Pine County Board of Commissioners believe the occupancy rate has increased substantially since the 2000 Census (White Pine County 2009b), however the Nevada State Demographer believes that population data and school enrollment data give conflicting indications for housing occupancy (personal communication, Nevada State Demographer Jeff Hardcastle, February 2, 2010).

TABLE 3.17-17 HOUSING OCCUPANCY, 2000

DESCRIPTION	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
Housing Units	827,457	2,178	4,439
Occupied	90.8%	70.7%	73.9%
Vacant	9.2%	29.3%	26.1%
For Seasonal, Recreational, or Occasional Use	2.0%	14.0%	17.3%

Source: Bureau of the Census 2000h

The median age of available housing is highest in White Pine County (**Table 3.17-18**). Housing in White Pine County tends to be about 10 to 20 years older than Lincoln County. The value of owner occupied housing is highest in Lincoln County (Bureau of the Census 2000i). White Pine County has a high number of residents living in institutional settings due to the Ely State Prison and Ely Conservation Camp inmate populations (White Pine County 2006).

TABLE 3.17-18 AGE AND VALUE OF HOUSING, 2000

DESCRIPTION	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
Median Year Built	1986	1974	1962
Median Value ($), Owner Occupied	132,500	74,300	65,600

Source: Bureau of the Census 2000i

White Pine County has the higher rate of owner-occupied housing units of the two counties. (**Table 3.17-19**). The higher percentage of owner occupied housing may be due to company housing provided by Kennecott. The company housing was sold to residents in the 1950's and represents the majority of the County's older housing stock.

TABLE 3.17-19 OCCUPIED HOUSING, 2000

DESCRIPTION	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
Occupied Housing Units	751,165	1,450	3,282
Owner Occupied	60.9%	74.7%	76.5%
Renter Occupied	39.1%	25.3%	23.5%

Source: Bureau of the Census 2000j

Both Lincoln and White Pine counties have a higher rate of single family units than does the state of Nevada, as a whole. Both counties also have a comparatively large number of mobile homes, a common occurrence in rural and agricultural areas. The percentage of housing structures that are mobile homes is greater than the state average in each of the subject counties (**Table 3.17-20**).

TABLE 3.17-20 HOUSING UNITS IN STRUCTURE, 2000

DESCRIPTION	STATE OF NEVADA	LINCOLN COUNTY	WHITE PINE COUNTY
Housing Units	827,457	2,178	4,439
1 Unit	57.7%	62.7%	72.5%
2-4 Units	8.8%	7.1%	5.2%
5-9 Units	8.0%	0.0%	1.3%
+10 Units	15.4%	1.9%	2.1%
Mobile Home/Other	10.1%	28.3%	18.8%

Source: Bureau of the Census 2000k

The White Pine County Assessor showed 4,381 housing units in the county as of July 2006. Of these, 2,177 were in Ely, 609 in McGill, 212 in Ruth, 85 in Lund, with the remainder scattered throughout the rest of the county (White Pine County 2006).

There are two USDA Rural Development public multi-family housing projects in Ely, and one sponsored by the Nevada Housing Division. A third USDA project, the Bristlecone Apartments, has been purchased by the Rural Nevada Development Corporation and is being managed as low-income housing.

Housing costs are currently rising in White Pine County. In 2005, the White Pine County Assessor reported that the median price of a house in Ely was $152,500, $55,000 in Ruth, $72,800 in McGill, and in the area surrounding Ely, $189,000 (White Pine County 2006).

The 2000 Decennial Census indicated that the median year-of-construction for housing in White Pine County was 1962 (**Table 3.17-18**). Many of the older homes contain lead paint. Other housing concerns in the county include lack of affordable single family homes, deterioration of

manufactured and mobile homes, and lack of special needs housing such as that for senior citizens and persons with disabilities (Crispin and Isaacson 2008).

3.17.3.7 Community Services

Social services in White Pine County are provided by a variety of government agencies and private groups. The County Social Services Department and Salvation Army provide emergency financial assistance in the form of emergency food and shelter, transportation, rent deposit assistance, and medical and burial assistance. The Food Stamps and Welfare Division of the Nevada Department of Human Resources provides food stamps. Nutritional education and assistance in purchasing food for low-income families is provided through the Women and Infant Children Supplemental Foods Program. Victims of domestic abuse can receive support and assistance through Support, Inc., a private non-profit organization. The White Pine Nutrition Programs in Ely and McGill provide meals, transportation, and recreation to senior citizens in the county. Adults with developmental disabilities in the county are served by the White Pine Rehabilitation and Training Center (Crispin and Isaacson 2008).

There is a need in White Pine County for increased child care at night and on weekends, primarily to serve family members employed at the local state prison who work rotating shifts. There is also a need for increased services for low-income elderly persons (White Pine County 2006).

Education

School districts in Nevada are defined along county lines. Enrollments in the two districts have declined slightly over the past several years (**Table 3.17-21**).

TABLE 3.17-21 SCHOOL ENROLLMENTS SELECTED YEARS

SCHOOL YEAR	LINCOLN COUNTY SCHOOL DISTRICT	WHITE PINE COUNTY SCHOOL DISTRICT
2007-2008	991	1,432
2006-2007	982	1,420
2005-2006	992	1,504
2004-2005	1,006	1,446
2003-2004	1,012	1,380
2002-2003	992	1,435
2001-2002	1,014	1,464
2000-2001	1,018	1,554

Source: Nevada Department of Education 2008

The Lincoln County School District operates nine schools with an enrollment of 991 students (**Table 3.17-22**). The smallest school is Pahranagat Valley Middle School with 45 students. The largest is Lincoln County Senior High School, which accommodates 187 students (Nevada Department of Education 2008).

TABLE 3.17-22 LINCOLN COUNTY SCHOOL DISTRICT PUBLIC SCHOOLS, 2007-08

SCHOOL	ENROLLMENT	SCHOOL	ENROLLMENT
Pahranagat Valley	135	Pahranagat Valley Middle	45
Caliente	127	Lincoln County Senior High	187
Panaca	112	Pahranagat Valley High	80
Pioche	81	C.O. Bastian High	132
Meadow Valley Middle	92		

Source: Nevada Department of Education 2008

The White Pine County School District operates eight schools with a total enrollment of 1,432 students for the 2008-09 school year (**Table 3.17-23**). The schools range in size from Steptoe Valley High with 17 students to David E. Norman Elementary with 442.

TABLE 3.17-23 WHITE PINE COUNTY SCHOOL DISTRICT PUBLIC SCHOOLS, 2007-08

SCHOOL	ENROLLMENT	SCHOOL	ENROLLMENT
Lund Elementary	34	White Pine Middle	318
Baker Elementary	10	White Pine High	407
David E. Norman	442	Lund High	46
McGill Elementary	143	Steptoe Valley High	17

Source: Nevada Department of Education 2008

School buildings are in constant need of maintenance and renovation within the White Pine School District. Many of the district's facilities are over 50 years old. The David E. Norman Elementary School was constructed in 1909, the White Pine Middle School in 1912, and McGill Elementary in 1962. All three facilities have problems associated with ADA (Americans with Disabilities Act) compliance, asbestos, and lead-based paint, and are in need of repairs and renovations to meet safety standards (White Pine County 2006).

The Community College of Southern Nevada, headquartered in Las Vegas, operates a satellite center in Caliente in Lincoln County.

Law Enforcement

The Nevada Highway Patrol provides law enforcement on the interstate highways and state highways. The Nevada Highway Patrol has substations in Ely, Elko, Jackpot, Wells, and Wendover.

County sheriffs are responsible for the unincorporated portions of the counties, and contract with some of the municipalities for law enforcement services. The White Pine County Sheriff's Department is staffed with an elected sheriff, 15 patrol officers, 5 dispatchers, 5 jailers, and part-time deputies in Baker and Lund. Under a cooperative agreement between White Pine County and the City of Ely, the County Sheriff also serves as the Ely Police Chief, and the county sheriff's office provides law enforcement for Ely. The White Pine County sheriff's department also has responsibility for the jail, civil processes, and county-wide emergency communications, and shares ambulance service with the Emergency Management Services office. The county jail has a capacity for 32 male and 8 female inmates. During 2005, the average inmate population was 17.4. The Ely Shoshone Tribal Council provides law enforcement and judicial services on tribal lands (White Pine County 2006).

Both Lincoln and White Pine counties have a "serious crime" rate that is lower than the state and national averages. Serious crimes are defined as murder and negligent manslaughter, forcible rape, robbery, aggravated assault, burglary, larceny-theft, and motor vehicle theft. These crimes were selected as an index because of their severity, frequency of occurrence, and likelihood of being reported to the police. In 2002, the two counties, individually, had serious

crime rates of, 1,038, and 1,923 per 100,000 persons for Lincoln, and White Pine counties, respectively. The comparable rate for the State of Nevada was 4,903 serious crimes per 100,000 persons. The nationwide rate was 4,063 serious crimes per 100,000 persons (Crispin and Isaacson 2008).

Fire Protection

Fire protection in the two counties is provided by various municipal fire departments. The Ely Fire Department has 5 full-time fire fighters and 28 volunteers. There are volunteer fire departments in McGill, Ruth, Lund, Baker, Cherry Creek, Cross Timbers, and Cold Creek (White Pine County 2006).

Health Care Services

There are two hospitals in the two-county area, one in each county. The William Bee Ririe Hospital in Ely is operated by White Pine County and has 40 beds. The Grover C. Dils Medical Center, operated by Lincoln County, is located in Caliente and has 20 beds. (Directory of America's Hospitals 2007; White Pine County 2006).

Six physicians practice in White Pine County: three general practitioners, one general surgeon, and two family practitioners supplemented by visiting specialists. There are also two dentists and one optometrist practicing in White Pine County. Nevada Home Health, a private non-profit corporation, provides in-home nursing care, and the area is served by one public health nurse. The White Pine Care Center is a 98-bed skilled nursing facility (White Pine County 2006).

The Ely Mental Health Center provides individual and family counseling, psychiatric evaluation, family and group therapy, and substance abuse counseling. Emergency services are available 24 hours a day. The facility serves White Pine, Lincoln, and Eureka counties, and is part of the state's rural clinic program. Staff for the center consists of two counselors, four support personnel, and nursing staff every other week, and monthly visits by a psychiatrist (White Pine County 2006).

Emergency medical services in White Pine County are provided by volunteer Emergency Medical Technicians. Dispatching is handled by the county sheriff's office (White Pine County 2006).

Water Supply

The majority of the public water supply systems in the two-county area rely on ground water supplied by wells (**Table 3.17-24**). The city of Ely's municipal water supply draws primarily on surface water rights for over 7,600 acre-feet per year with supplemental groundwater rights of over 3,000 acre-feet per year (NDWR 2007), which should be adequate, based on a state-wide average of 320 gallons per day (0.358 acre-feet per year) per residential user (NDWR 2010). However, in 2009 the City experienced a water shortage as outflow from Murry Springs dropped to 900 gallons per minute (down from 1,200 gallons per minute) and groundwater pumps were unable to keep up with demand (The Ely Times 2009; White Pine County 2009b).

TABLE 3.17-24 COMMUNITY WATER SYSTEMS IN THE TWO-COUNTY AREA

WATER SYSTEM NAME	PRINCIPAL COUNTY SERVED	POPULATION SERVED	PRIMARY WATER SOURCE TYPE
Ely Municipal Water Department	White Pine	5,400	Groundwater
Caliente Public Utilities	Lincoln	1,500	Groundwater
McGill Water and Sewer District	White Pine	1,200	Groundwater
Ely Maximum Security Prison	White Pine	1,030	Groundwater
Alamo Water and Sewer GID	Lincoln	900	Groundwater
Panaca Farmstead Water Association	Lincoln	800	Groundwater
Pioche Public Utilities	Lincoln	781	Groundwater
Ruth Water District	White Pine	700	Groundwater
Baker Water and Sewer GID	White Pine	85	Groundwater
Pioche Public Utilities Castleton	Lincoln	60	Groundwater
Valley View Trailer Park	White Pine	52	Groundwater
Cold Creek MHP	White Pine	35	Groundwater

Source: EPA 2007a

Solid Waste

White Pine County is served by a regional landfill operated by the Ely Municipal Utilities Board. The landfill is located on the northwestern boundary of Ely. Outlying communities are served by a private waste-collection company that provides pick-up service throughout the county. The landfill is licensed with a Class I permit through the Nevada Division of Environmental Protection and has applied for a Class III permit to accept construction waste. Available capacity in the landfill is being used more rapidly than was initially anticipated.

Additionally, solvents have been detected in the groundwater in the vicinity of the landfill. There is a long-term need to identify and develop an alternative landfill site.

3.17.3.8 Local Government Finances

Local government finances for the two counties are summarized in **Table 3.17-25**. These data include all local units of governments, including county governments, municipalities, school districts, and special districts. Lincoln County had the higher per capita taxes while White Pine County had the lowest. Each county spent the largest percentage of its budget on education with police and highways following. White Pine County had the highest outstanding debt per capita of $1,871, followed by Lincoln County at $1,435.

TABLE 3.17-25 LOCAL GOVERNMENT FINANCES, 2002

DESCRIPTION	LINCOLN COUNTY	WHITE PINE COUNTY
General Revenue (million $)	22.5	28.9
Intergovernmental Transfers (million $)	15.6	19.1
Total Taxes (million $)	4.2	5.2
Per Capita Taxes ($)	980	596
Per Capita Property Taxes ($)	916	478
Direct General Expenditures (million $)	19.8	28.2
Per Capita Direct General Expenditures ($)	4,659	3,242
Education (%)	53.0%	49.9%
Health and Hospitals (%)	0.7%	0.9%
Police (%)	5.8%	10.7%
Public Welfare (%)	1.5%	1.0%
Highways (%)	10.4%	7.4%
Total Outstanding Debt (million $)	6.1	16.3
Per Capita Outstanding Debt ($)	1,435	1,871

Source: Bureau of the Census, 2002 Census of Government, as cited in Crispin and Isaacson 2008

There are two units of local government in White Pine County—the county and the City of Ely. White Pine County and the City of Ely negotiate an annual cooperative agreement to share costs and responsibilities for fire protection, law enforcement, and animal control. Additional governing authority lies with the Ely Shoshone Tribal Government, the White Pine School Board, and general improvement districts. The White Pine School Board, William Bee Ririe Hospital Board, Baker and McGill Ruth Water and Sewer General Improvement Districts, and the White Pine and Baker TV Districts are elected boards that operate independently of city and county governments (White Pine County 2006).

The communities of Ruth, McGill, Lund, Preston, Cherry Creek, and Baker are unincorporated, and have budgets administered through the county government. Each of these communities has a community board that reports to the county commission (White Pine County 2006).

The White Pine County government was nearly insolvent at the end of 2005 and was placed under the supervision of the Nevada Department of Taxation; this status was rescinded by the 2009 State Legislature (White Pine County 2009b). Insolvency was averted through a combination of tax increases, imposition of a franchise fee, and budget reductions. Although some county personnel were laid-off, no county services or facilities were closed.

Taxable sales in Lincoln County rose markedly from $15.4 million in FY 2006-07 to almost $27 million in FY 2007-08, an increase of more than 75%. In comparison, taxable sales in White Pine County were relatively flat, increasing from $192.9 million in FY 2006-07 to $197.8 million in 2007-08 (**Table 3.17-26**).

TABLE 3.17-26 TAXABLE SALES IN LINCOLN AND WHITE PINE COUNTIES, FY 2006-2007 AND FY 2007-2008

AREA	FISCAL YEAR, 2006-07	FISCAL YEAR, 2007-08	PERCENT CHANGE
Lincoln County	$15,397,747	$26,967,548	75.1%
White Pine County	192,877,042	197,817,869	2.6%
State of Nevada	49,427,707,108	48,196,848,945	-2.5%

Source: Nevada Department of Taxation 2007 and 2008

In Nevada, there is a minimum 6.5 percent statewide sales tax and various county-option sales taxes. The total sales tax rate in White Pine County is 7.125 percent, while the rate is 6.75 percent in Lincoln County. The 6.5 percent statewide sales tax is comprised of a 2 percent state tax, a 2.25 percent Local Schools Support Tax, a 0.50 percent Basic City-County Relief Tax, and a 1.75 percent Supplemental City-County Relief Tax. All of the state tax is placed in the states' general fund. The other three taxes are distributed between the counties of origin and the state according to established guidelines (Nevada Department of Taxation 2006a).

In addition to the state minimum 6.5 percent sales tax, White Pine County also levies a 0.125 percent Extraordinary Maintenance, Repair or Improvement of School Facilities Tax (White Pine County 2009b). Lincoln County imposes a 0.25 percent Infrastructure Tax (Nevada Department of Taxation 2006a).

Portions of various excise taxes levied in Nevada are also returned to county governments. These include the Cigarette Tax, the Liquor Tax, Real Property Transfer Tax, and a Motor Vehicle Privilege Tax. The amounts of the various sales and excise taxes returned to the county governments for the 2007-2008 fiscal year are listed in **Table 3.17-27** (Nevada Department of Taxation 2008).

TABLE 3.17-27 STATE SALES AND EXCISE TAX COLLECTIONS DISTRIBUTED TO LINCOLN AND WHITE PINE COUNTIES, FY 2007-2008

TAX	LINCOLN COUNTY	WHITE PINE COUNTY
Local School Support Tax	$325,375	$2,216.422
Basic City/County Relief Tax	$143,828	$819,972
Supplemental City/County Relief Tax	$1,389,091	$3,171,543
Local Option Sales and Use Tax	$68,858	$1,582,331
Cigarette Tax	$23,296	$55,564
Liquor Tax	$4,906	$11,643
Real Property Transfer Tax	$27,980	$62,478
Motor Vehicle Privilege Tax	$432,934	$822,679

Note: The data presented here are based on figures provided on the Sales and Use tax returns by registered permit holders in and out of the state of Nevada. Large increases or decreases may be due to audits or deficiency determinations performed on taxpayers doing business in a county.

Source: Nevada Department of Taxation 2008

Property taxes are also levied in Nevada at the appropriate rate on the assessed value, which is defined as 35 percent of the taxable value. The taxable value for land is considered the cash value the property would bring in a competitive and open market. For improvements, the taxable value is considered the replacement cost minus depreciation. There is also a tax on the net proceeds of minerals in lieu of property tax on mining and natural resource extraction operations. Mining companies are allowed to deduct from the gross proceeds expenses directly

tied to the production of minerals. This tax is levied at property tax rates (Nevada Department of Taxation 2008).

The total assessed valuation for White Pine County went down by 1.5 percent from the 2006-2007 fiscal year to the 2007-2008 fiscal year (**Table 3.17-28**). The assessed value increased by 10.7 percent in Lincoln County. Unlike the decrease in White Pine County, the rise in assessed value in Lincoln County was due to a rise in the value of real and personal property, and not to an increase in the net proceeds from minerals (Nevada Department of Taxation 2007, 2008).

TABLE 3.17-28 TOTAL ASSESSED VALUATION, FY 2006-07 AND FY 2007-08

AREA	FY 2006-07	FY 2007-08	PERCENT CHANGE
Lincoln County	$163,827,835	$181,285,830	10.66%
White Pine County	$410,137,833	$403,878,274	-1.53%
State of Nevada	$120,714,693,368	$140,146,163,395	16.10%

Source: Nevada Department of Taxation 2007 and 2008

Nevada has a statutory property tax rate cap of $3.64 per $100 of assessed value. In 2005, the State Legislature approved an additional $0.02 per $100 of assessed value. This amount is in addition to the $3.64 per $100 rate cap. Of the additional $0.02, $0.0085 is slated for statewide capital improvements and the remaining $0.015 will go to the conservation of natural resources in Nevada. The average countywide property tax for White Pine County is 3.66 percent for the 2006-2007 fiscal year. The property tax rate for White Pine County is the maximum allowed by Nevada State law. The property tax rate for Lincoln County is 3.0766 percent for the 2006-2007 fiscal year.

Property taxes are levied by various government entities and distributed to these various entities upon collection by either the county or state governments. Of a total of $8,445,110 projected to be distributed in White Pine County for the 2006-2007 fiscal year, the largest recipient is the county government (**Table 3.17-29**). In both White Pine and Lincoln counties, the largest recipient of property tax revenue is the county government. Statewide in Nevada the school districts are the largest recipients (Nevada Department of Taxation 2006b).

TABLE 3.17-29 PROPERTY TAX REVENUE, 2006-2007 FY

TAX	LINCOLN COUNTY, NV	WHITE PINE COUNTY, NV	STATE OF NEVADA
Schools	$1,515,214	$2,424,854	$1,448,580,988
Counties	$2,082,622	$4,381,997	$910,456,361
Cities	$94,083	0	$446,067,770
Towns	$79,601	0	$95,223,982
Combined Special Districts	$754,394	$1,246,000	$508,388,611
State	$264,707	$392,259	$194,648,581
Total	$4,790,621	$8,445,110	$3,603,366,293

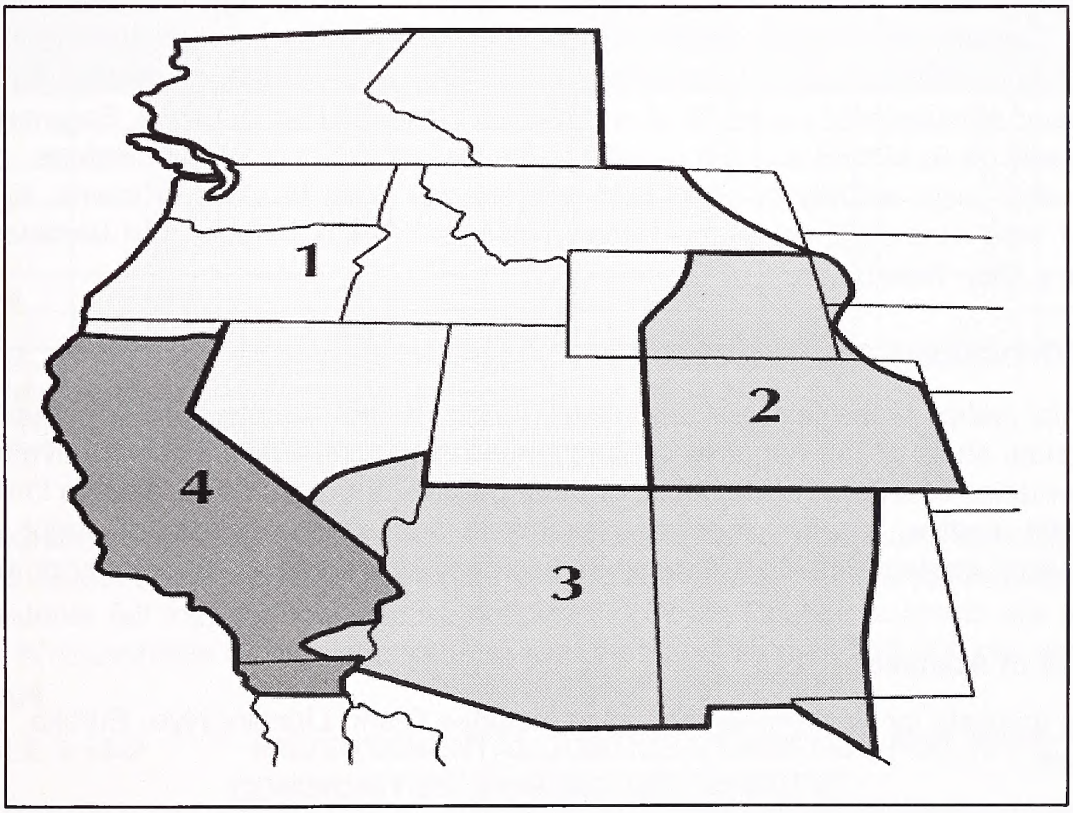
Source: Nevada Department of Taxation Fiscal Year 2006b

3.17.3.9 Electric Power Industry

The market for electric energy is regional with eight electric reliability councils across the country coordinating the delivery system. In the western United States, the Western Electricity Coordinating Council (WECC) coordinates the system in all or part of 14 states, the Canadian

provinces of Alberta and British Columbia, and a portion of northern Baja California (**Figure 3.17-1**). Within the WECC, southern Nevada, which is primarily served by NV Energy (formerly Nevada Power Company), is included in the Arizona/New Mexico/Southern Nevada Power Area (AZ/NM/SNV); and the remainder of Nevada, which is primarily served by NV Energy (formerly Sierra Pacific Power Company), is in the Northwest Power Pool Area (NWPP). The Rocky Mountain Power Area (RMPA) and the California/Mexico Power Area (CA/MX) are the remaining reporting areas in the WECC (WECC 2006). These reporting areas are generally defined by the location of generating and transmission facilities and ability to transmit electric energy. Currently, there is no existing transmission connection between the Northwest Power Pool Area and the Arizona/New Mexico/Southern Nevada Power Area. The transmission facilities associated with the ON Line Project would provide transmission connection between these two areas.

Figure 3.17-1 Western Electricity Coordinating Council Reporting Areas



(1) Northwest Power Pool Area (2) Rocky Mountain Power Area (3) Arizona/New Mexico/Southern Nevada Power Area (4) California Mexico Power Area Source: Western Electricity Coordinating Council, 2006

Projections by the WECC indicate that summer peak electric energy demand in the WECC service area will increase by 22.8 percent between 2005 and 2015 (**Table 3.17-30**). Peak summer demand in the Arizona/New Mexico/Southern Nevada Power Area is expected to increase by 30.6 percent over the same time period.

TABLE 3.17-30 SUMMER PEAK ELECTRIC ENERGY DEMAND IN WECC REPORTING AREAS (MW)

AREA	2004	2005	2015
Northwest Power Pool Area	51,069	52,698	63,129
Rocky Mountain Power Area	10,400	11,086	14,029
Arizona/New Mexico/Southern Nevada Power Area	25,634	27,974	36,526
California Mexico Power Area	55,920	57,389	70,321
Western Electricity Coordinating Council	141,100	149,147	183,148

Source: Western Electricity Coordinating Council 2006

3.17.4 Specific Project Area Conditions

The Robinson Summit Substation, or the RSS-Site B sub-alternative, would be constructed on land administered by the BLM and is approximately 20 miles northwest of Ely. There are no communities in close proximity to the proposed Robinson Summit Substation. The transmission line alignment generally passes through public lands or rural areas with dispersed populations. Segment 6C passes within about 10 miles to the west of Ruth, Nevada (located about 10 miles northwest of Ely). The estimated population of Ruth in 2005 was 394. Segments 8 and 9B, lie entirely on land administered by the BLM and are not close to cities or towns. Segments 9A and 9D are primarily on BLM land and run parallel to the Desert National Wildlife Refuge. Segments 9C and 10 also occur entirely on BLM land and are not close to cities or towns. A portion of Segment 11 also runs adjacent to the Desert National Wildlife Refuge, and terminates at the existing Harry Allen Substation.

3.18 Environmental Justice

Environmental justice is the fair treatment of all people so that no one group of people bears a disproportionate share of the negative consequences of industrial or municipal development, or the implementation of federal, state, local, or tribal policies or programs. Executive Order 12898, *Environmental Justice*, requires federal agencies to analyze the effects of major actions to determine if their implementation will result in disproportionate effects to minority or low-income populations.

3.18.1 Area of Analysis

The area of analysis for environmental justice includes Clark, Lincoln, Nye, Eureka, and White Pine counties.

3.18.2 Data Sources and Methods

The indicators are minority and/or low-income populations in the area of analysis that have the potential to be affected by high, adverse human health or environmental effects during construction or operations phases of the Proposed Action or Action Alternative. Minority population and income data was taken from the Bureau of the Census 2000 Decennial data noted above in **Section 3.17** and the EPA Environmental Justice Geographic Assessment Tool (EPA 2008a). Also reviewed were the White Pine County, Nevada 2006 Comprehensive Economic Strategy, and the White Pine Energy Station Project Draft EIS (BLM 2007c).

3.18.3 Existing Conditions

As noted in **Section 3.17**, the project area is primarily rural.

Table 3.18-1 shows racial and ethnic populations of the project area and the State of Nevada as a percentage of the overall population in 2000. As per CEQ guidance (CEQ 1997), minority populations of the five counties have been compared to that of the same minority for the larger population (the State of Nevada); where the county minority population is "meaningfully greater" than the parallel state population, it is considered a significant minority population (CEQ 1997; EPA 1998). As noted in the table by asterisks, the percentage of Native Americans in Nye and White Pine counties exceeds the statewide percentage by more than 50 percent. This finding is not unexpected given the several reservations and colonies in those counties.

TABLE 3.18-1 ENVIRONMENTAL JUSTICE STATISTICS FOR AFFECTED COUNTIES (BY RACE AND ETHNICITY)

	Racial/Ethnic Groups, 2000 Census (%)						
State/County	White	African American	Asian/ Pacific Islander	Native American/ Alaskan	Other Race	Hispanic or Latino Origin	Population
Nevada	75.2	6.6	4.5	1.3	7.9	19.7	1,998,257
Clark	71.7	8.9	5.2	0.8	8.6	21.9	1,375,765
Eureka	89.3	0.4	0.8	1.6	4.4	9.6	1,651
Lincoln	92.1	1.8	0.8	0.7	2.5	5.0	4,165
Nye	89.7	1.0	0.7	2.3*	2.5	8.3	32,485
White Pine	86.6	4.6	0.7	3.4*	3.0	10.7	9,181
Nevada x 1.5		9.9	6.75	1.95	11.85	29.55	

Source: EPA 2008a. Environmental Justice Geographic Assessment Tool, accessed on line at http://www.epa.gov/Compliance/whereyoulive/ejtool.html on May 28, 2008

*Exceeds the threshold value of 1.5 times the state population percentage for the group, thereby constituting a minority population

Table 3.18-2 shows personal and household income statistics for the project area and the State of Nevada in 2000. From the table it is evident that a substantially higher percentage of Lincoln County residents fall into the low income brackets. Lincoln County residents are twice more likely to be in households on public assistance and earning less than $15,000 per year than the state average.

TABLE 3.18-2 ENVIRONMENTAL JUSTICE STATISTICS FOR AFFECTED COMMUNITIES (FOR INCOME GROUPS)

				Household Income (%)			
State/ County	Population	Persons Below Poverty Level (%)	Households on Public Assistance (%)	<$15,000	$15,000-$25,000	$25,000-$50,000	$50,000-$75,000
Nevada	1,998,257	10.3	2.3	12.4	12.3	31.2	21.8
Clark	1,375,765	10.6	2.4	12.2	12.4	31.3	21.5
Eureka	1,651	12.5	2.4	20.7	12.3	26.1	24.0
Lincoln	4,165	15	5.1	25.6	16.2	25.5	22.7
Nye	32,485	10.6	3.5	18.8	14.6	34.9	17.0
White Pine	9,181	9.4	2.7	18.3	14.6	31.8	22.9

Source: EPA 2008a. Environmental Justice Geographic Assessment Tool, accessed on line at http://www.epa.gov/Compliance/whereyoulive/ejtool.html on May 28, 2008

3.18.4 Specific Project Area Conditions

3.18.4.1 Minority Communities

A minority population may be present if the minority population percentage of the affected area is meaningfully greater than the minority population in the general area. According to demographic data provided above in **Section 3.17** and in **Tables 3.18-1** and **3.18-2**, Eureka, Lincoln, Nye, and White Pine counties are relatively uniform demographically. White Pine County's population is 86.6 percent white. The second largest racial group is black, making up 4.6 percent of the population. Lincoln County's population is over 90 percent white with the second most commonly cited racial category composed of two or more races. In Nye County, 89.7 percent of the population is white, with the second most commonly cited racial category composed of two or more races. Eureka County is 89.3 percent white with the second most commonly cited racial category as other. Clark County's population is 71.7 percent white with the second most commonly cited racial category as African American.

Hispanics, who may be of any race, comprise 10.7 percent of the population of White Pine County, 9.6 percent of Eureka County, 8.3 percent of the Nye County population, and 5.0 percent of Lincoln County's population. In comparison, the State of Nevada in 2000 was about 75.2 percent white, 19.7 percent Hispanic or Latino, 6.6 percent black or African American, and 1.3 percent Native American.

The data demonstrates that there are minority populations in the project area, based on racial factors. The Native American Concerns sections of this FEIS (**Section 3.11** and **4.11**) further describe this segment of the minority population in the area.

The White Pine County population data used for the 2000 Census includes the inmate population (White Pine County 2009b) which is significant due to both a men's maximum-security prison and a men's minimum-security conservation camp being present. The inclusion of the inmate population impacts the population breakdown by racial and ethnic background as well as the percentage of male and female residents of the county. This may be why the percentages of some of the racial/ethnic populations of White Pine County are higher than the state percentages (**Table 3.18-1**).

3.18.4.2 Low Income Communities

Low income families are defined as those families whose incomes do not exceed 150 percent of the poverty level. Poverty is defined by family; either everyone in a family is at poverty level or no one in the family is in poverty. The family characteristics used to determine poverty status include: number of people, number of children in the family under age 18, whether or not the main householder is over age 65, and the household income. Based upon family characteristics, a household income threshold is determined as the basis for whether or not that family is defined as living at or below the poverty level.

In White Pine County in 2004, there were an estimated 961 individuals at poverty level (12.4 percent); 282 were under age 18. In Lincoln County in 2004, 523 (13 percent) individuals were at poverty level; 188 were under age 18. In Eureka County, 206 (12.5 percent) individuals were at poverty level.

The number of low income households surveyed in White Pine County for the White Pine Energy Station Project Draft EIS (BLM 2007c) is 838 (25 percent of the county's households). The number of individuals surveyed who live in low income households in the three census tracts, including Ely and McGill, was 866. Of those 866, 265 lived either in small communities of less than 1,000 people, or in areas where no other residences existed within several miles. Of

241 low-income people surveyed in census tract 9701, 112 live in McGill. There are 489 low-income people in Ely.

Lincoln County has the largest number of persons in the lower income brackets, with 25.3 percent of households having an income of less than $15,000 per year. Lincoln County is also the most rural in nature of the three counties along the transmission line alignment, with 0.4 people per square mile (/sq mi) (1.0/sq mi in White Pine County and 1.8/sq mi in Nye County).

The Robinson Summit Substation and RSS-Site B sub-alternative would be located on public lands in remote areas with limited settlement. Similarly, the Falcon Substation expansion area, although on private lands, is in an area of dispersed population. The transmission line alignments generally pass through public lands or rural areas with dispersed populations. Since there are up to about 25 percent low income households present in Nye, White Pine, and Lincoln counties, it is likely that some rural, low income households would be located near the proposed transmission line.

See, also, **Section 3.17** above for further details on the socio-economics of the area.

3.18.4.3 Public Participation

An integral part of the public participation process included scoping meetings, mailings, and press releases as described in the Scoping Report (JBR 2007c). See **Chapter 6**, Consultation and Coordination, for a complete description of public involvement efforts.

3.19 Hazardous and Solid Waste Materials

3.19.1 Area of Analysis

The project area includes the proposed Robinson Summit Substation site and generally a 1,000-foot-wide area that extends 500 feet from each side of the proposed centerline for the transmission line alignment.

3.19.2 Data Sources and Methods

Data for this section were acquired from field observations.

3.19.3 Existing Conditions

Most of the land uses of the Proposed Action and Action Alternative have been open range or agricultural with no history of solid or hazardous waste generation or disposal. There is evidence of scattered debris being located within the proposed transmission line alignments.

The solid waste disposal activities in the county are described in the White Pine County Solid Waste Management Plan Revision (WPCC 2006). White Pine County and the City of Ely maintain in inter-local agreement governing charges for the use of the City's landfill to meet the needs of county residents. White Pine County maintains a franchise agreement with a contractor for collecting, hauling, and disposing of solid waste from all areas of the county to the White Pine Regional Landfill. The franchise agreement prohibits other parties from providing these same services as a business venture in the county. The franchise agreement does not prohibit solid waste generators from hauling and disposing of their own waste at the landfill.

Beginning in 2003, the City of Ely, Nevada Division of Forestry, BLM, and the USFS collaborated to reduce solid waste disposal in remote areas of the County and direct solid waste from these areas to the Ely landfill. The program has reportedly resulted in fewer illegal dumps occurring on public lands in the area (www.blm.gov/nv).

There is no hazardous waste disposal facility located in the immediate area so these materials that are generated locally and disposed in permitted hazardous waste facilities are trucked by commercial carriers to existing, permitted facilities in Nevada and surrounding states.

3.19.4 Specific Project Area Conditions

The Robinson Summit Substation, RSS-Site B sub-alternative, and transmission line alignments are generally located on BLM-administered land that is currently undeveloped and used for livestock grazing and wildlife habitat. Portions of the land affected by the transmission line alignments cross private property. Although the existence of hazardous materials along these proposed alignments is possible, development within these areas is limited and is not expected to have produced substantial quantities of hazardous materials. There are widely scattered occurrences of solid wastes within the transmission line alignments and no reports of hazardous materials or wastes.

The Falcon Substation is located on private land. The land adjacent to the existing substation is undeveloped. The current uses of the area are rangeland for domestic cattle use and agricultural land use.

3.20 Transportation

3.20.1 Area of Analysis

This section discusses the existing transportation system within the project area for the ON Line Project. The area of analysis for transportation includes the transportation routes potentially used by the ON Line Project and includes roads in White Pine, Nye, Eureka, Lincoln, and Clark counties.

3.20.2 Data Sources and Methods

Existing information on transportation routes within the area of analysis was reviewed and a site-specific transportation study was conducted by HDR Engineering, Inc. and Cummins and Bernard, Inc. (HDR et al. 2007) including:

- Existing highways and road infrastructure
- Other types of transportation routes/access (i.e., railroad, air)
- Level of service of existing primary access routes to project area
- Road administration
- Crash data

3.20.3 Existing Conditions

The project area is generally accessed via a system of regional highways, including US-93, US-50, Interstate 80 (I-80), I-15, SR-318, and US-6 (**Figure 3-20.1**). The Federal Highway Administration (FHWA) administers US-93, I-80, I-15, US-50, and US-6. The Nevada Department of Transportation (NDOT) administers SR-318 and maintains all of the primary routes mentioned. I-80 is an east-west interstate highway that traverses across the northern portion of Nevada. I-15 is generally a north-south interstate highway connecting Las Vegas, Nevada and Salt Lake City, Utah. US-93 runs generally north-south between I-80 and I-15. SR-318 is also a north-south highway that connects US-93 with US-6. US-6, US-50, and I-80 generally run east-west, while US-93, I-15, and SR-318 are generally north-south travelways (see **Figure 3.20-1**).

Both public and private lands are connected to the highway system by an extensive network of unpaved roads. Excluding the primary transportation routes, most roads within the project area are not maintained or paved. Non-maintained or unpaved roads may require four-wheel drive access vehicles due to rough terrain, steep grades, drainage crossings, or other obstructions. These roads include county and private roads.

The primary roads would provide general access to the ON Line Project for construction personnel, construction materials and equipment delivery, and project operation personnel.

There are many cities and towns along this system of highways that could provide personnel, materials, and services. These towns and the highways that link them to the project area are listed in **Table 3.20-1**.

TABLE 3.20-1 POTENTIAL SOURCE TOWNS AND CITIES FOR PROJECT CONSTRUCTION AND OPERATION PERSONNEL AND ASSOCIATED ROADWAYS TO ACCESS THE ON LINE PROJECT

TOWN/CITY, STATE	ROADWAY
Austin, Nevada	US-50 and US-93
Battle Mountain, Nevada	I-80
Carlin, Nevada	I-80
Elko, Nevada	I-80 and US-93
Ely, Nevada	US-93
Eureka, Nevada	US-50 and US-93
Las Vegas, Nevada	I-15 and US-93 or I-15, US-93, SR-318, and US-6
McGill, Nevada	US-93
Pioche, Nevada	US-93
Salt Lake City, Utah	I-80 and US-93
Wells, Nevada	I-80 and US-93
Wendover, Utah	I-80 and US-93
West Wendover, Nevada	I-80 and US-93

A roads Level of Service (LOS) is a qualitative measure of the operating conditions experienced under varying traffic volumes (HDR et al. 2007). There are six LOS conditions that describe operating traffic conditions from best to worst, A through F, respectively (see **Table 3.20-2**).

TABLE 3.20-2 ROADWAY LEVEL OF SERVICE

LEVEL OF SERVICE (LOS)	DESCRIPTION
A	Free flow, low traffic density or delay
B	Minimum density or delay, stable traffic flow
C	Stable, movements somewhat restricted due to higher volumes, but not objectionable
D	Restricted movements, queues and delay may occur during short peaks, but lower demand occurs often enough to permit clearing, preventing excessive backups
E	Frequent delays, actual capacity is utilized; all movements experience congestion and delay
F	Forced flow, demand volumes exceed capacity resulting in complete congestion

According to the project specific traffic study (HDR et al. 2007), US-93 currently functions at operational LOS A. Traffic counts for various areas along US-93 and other roadways in the

project area are taken by NDOT annually and summarized in their Annual Traffic Report (NDOT 2006).

Traffic crash data indicates the highest crash type applicable to the project area involves vehicles that ran off the roadway and struck a fixed object due to vehicle speeds too fast for driving conditions (HDR et al. 2007). Other primary crash types in the area include: animal, ran off roadway and overturned, rear-end collision, and angle collision. The five primary contributing factors to these accidents include: speed too fast for conditions, failure to yield, inattentive driving, animal in roadway, and improper backing (HDR et al. 2007).

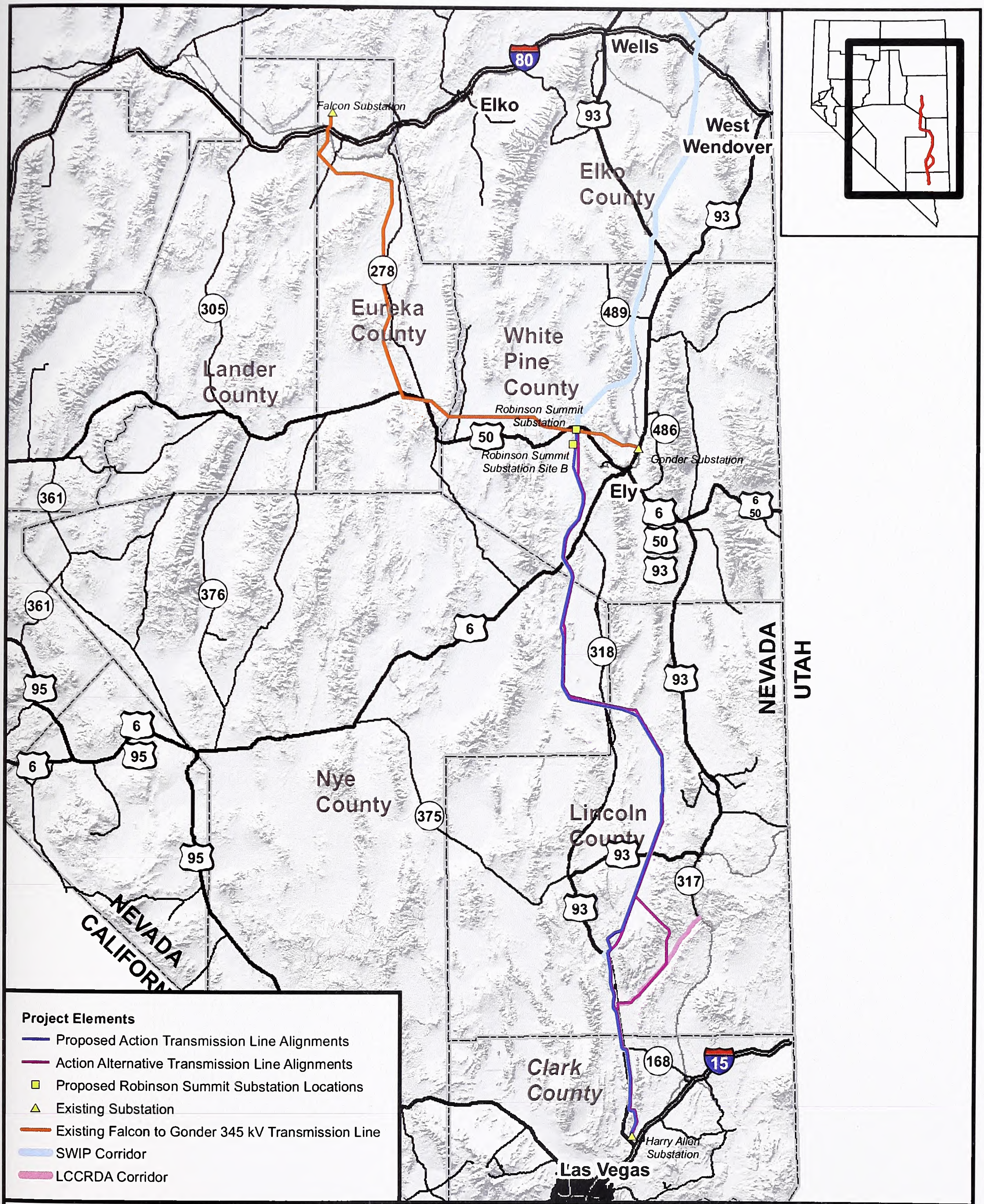
The majority of access on BLM lands in the Ely District is informal with reasonable access made for permitted uses such as mining claims, mining uses, mineral leases, grazing, recreation, rights-of-way, and other specific uses (BLM 2008a). Road system management by the BLM is variable with priorities for road maintenance determined on a case-by-case basis. There has been an increase in informal travel route proliferation in the Ely District. Between 1998 and 2003, there has been a 184 percent increase in off-highway vehicle use in Nevada (BLM 2008a). New roads may be constructed on BLM administered land in connection with an authorized project such as a mineral lease or right-of-way.

The Union Pacific Railroad runs generally east-west through Nevada with a northern and southern route. The northern route roughly follows I-80 through the state, while the southern route links Salt Lake City, Utah to Las Vegas, passing through Caliente and Moapa on the way to Las Vegas. Passenger service is available on the northern route, provided by Amtrak.

3.20.4 Specific Project Area Conditions

The transmission facilities traverse generally north-south from near Ely to northeast of Las Vegas. The primary routes accessing the transmission line alignments would include US-93, US-50, US-6, and I-15. Secondary access from the highways would include local improved and unimproved roads.

The Robinson Summit Substation and RSS-Site B sub-alternative sites are accessed via the Jakes Valley Road that heads south from US-50. The existing Harry Allen Substation is accessed via a paved road off of US-93, I-15, and SR-604. The existing Falcon Substation is accessed via the Dunphy Road and then the Boulder Valley Road, off of I-80.



Source - Highways: ESRI
Base Map: University of Nevada, Reno and ESRI

1:2,500,000
10 0 50 Miles
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Scale is 1:2,500,000 when printed at 8.5" x 11"

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FIGURE 3.20-1
TRANSPORTATION MAP
ON LINE PROJECT

Chapter 4

Environmental Consequences

Chapter 4
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Chapter 4
Environmental Consequences

4.1 Impact Assessment

The Proposed Action and Action Alternatives outlined in Chapter 2 may cause, directly or indirectly, changes in the human environment. This FEIS assesses and analyzes these potential changes and discloses the effects to the decision-makers and public. This process of disclosure is one of the fundamental aims of NEPA. There are many concepts and terms used when discussing impacts assessment that may not be familiar to the average reader. The following sections attempt to clarify some of these concepts.

4.1.1 Impacts/Effects

The terms "effect" and "impact" are synonymous under NEPA. Effects may refer to adverse or beneficial ecological, aesthetic, historical, cultural, economic, social, or health-related phenomena that may be caused by the Proposed Action or Action Alternative (40 CFR 1508.8). Effects may be direct, indirect, or cumulative in nature. Cumulative effects are analyzed in Chapter 5.

4.1.2 Direct Effects

A direct effect, caused by the action, occurs at the same time and place as the action (40 CFR 1508.8(a)). Direct and indirect effects are discussed in combination under each affected resource.

4.1.3 Indirect Effects

Indirect effects are reasonably foreseeable effects, also caused by the action, that occur later in time or are removed in distance from the action (40 CFR 1508.8(b)). Direct and indirect effects are discussed in combination under each affected resource.

4.1.4 Significance

The word "significant" has a very particular meaning when used in a NEPA document (40 CFR 1508.27). Significance is defined by CEQ as a measure of the *intensity* and *context* of the effects of a major federal action on, or the importance of that action to, the human environment. Significance is a function of the beneficial and adverse effects of an action on the environment.

Intensity refers to the severity or level of magnitude of impact. Public health and safety, proximity to sensitive areas, level of controversy, unique risks, or potentially precedent-setting effects are all factors to be considered in determining intensity of effect. This EIS primarily uses the terms Major, Moderate, Minor, or Negligible in describing the intensity of effects. A major effect would be considered significant.

Context means that the effect(s) of an action must be analyzed within a framework, or within physical or conceptual limits. Resource disciplines; location, type, or size of area affected (e.g., local, regional, national); and affected interests are all elements of context that ultimately determine significance. Both long- and short-term effects are relevant.

4.1.5 Indicators

Impact indicators are the consistent currency used to determine change (and the intensity of change) in a resource. Working from an established existing condition (i.e., baseline conditions described in Chapter 3) this indicator would be used to predict or detect change in a resource related to causal effects of proposed actions.

4.1.6 Environmental Effect Categories

The following environmental effect categories (**Table 4.1-1**) are presented to define relative levels of effect intensity and context for each resource that is analyzed in this Chapter and to provide a common language when describing effects.

TABLE 4.1-1 SUMMARY OF TERMS USED TO DESCRIBE EFFECTS IN THE FEIS

ATTRIBUTE OF EFFECT		DESCRIPTION
Magnitude (Intensity)	Negligible	A change in current conditions that is too small to be physically measured using normal methods or perceptible to a trained human observer. There is no noticeable effect on the natural or baseline setting. There are no required changes in management or utilization of the resource.
	Minor	A change in current conditions that is just measurable with normal methods or barely perceptible to a trained human observer. The change may affect individuals of a population or a small (<10 percent) portion of a resource but does not result in a modification in the overall population, or the value or productivity the resource. There are no required changes in management or utilization of the resource.
	Moderate	An easily measurable change in current conditions that is readily noticeable to a trained human observer. The change affects 25 to 75 percent of individuals of a population or similar portion of a resource which may lead to modification or loss in viability in the overall population, or the value or productivity the resource. There are some required changes in management or utilization of the resource.
	Major	Significant. A large measurable change in current conditions that is easily recognized by all human observers. The change affects more than 75 percent of individuals of a population or similar portion of a resource which leads to significant modification in the overall population, or the value or productivity the resource. There are profound or complete changes in management or utilization of the resource. An impact that is not in compliance with applicable regulatory standards or thresholds.
Duration	Transient/Temporary	Short-lived (i.e., during construction)
	Short-term	10 years or less
	Long-term	More than 10 years

4.1.7 Mitigation

Where applicable, mitigation measures are proposed in this document. Mitigation measures are means to address environmental impacts that are applied in the impact analysis to reduce intensity or eliminate the impacts. To be adequate and effective, CEQ rules (40 CFR 1508.20) require that mitigation measures fit into one of five categories:

(a) avoiding the impact altogether by not taking a certain action or parts of an action;

(b) minimizing impacts by limiting the degree or magnitude of the action and its implementation;

(c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

(d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or

(e) compensating for the impact by replacing or providing substitute resources or environments.

4.2 Water Resources

4.2.1 Indicators and Methods

As previously discussed in **Section 1.13.2**, a number of issues associated with potential environmental impacts were identified, along with corresponding indicators to help address those issues. The issues involved potential environmental effects regarding water quality and physical alteration of surface water features. Project-related activities causing potential water resource effects include permanent and temporary surface disturbance, which occurs throughout the project area. The following indicators have been identified in order to evaluate potential project impacts on water resources, including their potential project activity cause:

- Suspended sediment concentration, turbidity, pH, and contaminants of concern in downgradient streams, ponds, and other surface waters, with regards to applicable surface water quality standards
- Changes in volume and timing of surface water runoff
- Projected frequency, extent, and duration of flooding as a result of surface water runoff

In order to compare effects associated with the Proposed Action and Action Alternative project elements, these indicators were considered both independently and in conjunction with one another.

4.2.1.1 Wetlands and Waters of the United States

Delineation of waters of the United States (U.S.), including wetlands, was conducted for portions of this project (JBR 2007a). A formal determination from the U.S. Army Corps of Engineers (the Corps), in order to establish which, if any, of the waters within the area of analysis are jurisdictional under the Clean Water Act (CWA), has not been completed as of the writing of this document and is proposed to occur as part of the COM Plan. Therefore, in order to evaluate the greatest potential degree of impact, it is assumed all waters and wetlands mentioned here are jurisdictional under the CWA until otherwise directed by the Corps (or other appropriate regulatory agency).

4.2.2 Proposed Action

The Proposed Action consists of the Robinson Summit 500/345 kV Substation, a 236-mile 500 kV transmission line described as Segments 6C, 8, 9A, 9B, 9D, and 11, loop-in of the existing Falcon–Gonder 345 kV transmission line at the new Robinson Summit Substation, expansion of the existing Falcon Substation to add new electrical equipment, addition of new electrical equipment inside the existing footprint of the Harry Allen Substation, telecommunication facilities along the new line and at the substations, associated appurtenant facilities, and access roads. The new 500 kV transmission line would have a northern terminus at the Robinson Summit

Substation, from which it would extend south through Jakes Valley, the White River Valley, across the southern Scheel Creek Range into Dry Lake Valley, Delamar Valley, Coyote Springs Valley, across the southern Arrow Canyon Range, and have a southern terminus at the existing Harry Allen Substation in Dry Lake Valley northeast of Las Vegas.

Construction

Linear transmission facilities would extend from Robinson Summit Substation, across Ellison Creek and White River in White Pine County, and continue on to the Harry Allen Substation in Clark County. Waters of the United States, including wetlands, are present at these proposed stream crossing locations, as well as others along the southern reaches of the alignment.

Sanitary wastewater produced along the ON Line Project would be managed with portable facilities and sanitary waste would be trucked to publicly owned treatment works for disposal.

Surface Water Resources – Live Waters and Wetlands

Segment 6C of the Proposed Action would cross a small stream originating from Warm Spring in southern White Pine County that flows into Ellison Creek and, ultimately, the White River. This crossing is less than 40 linear feet at the stream's widest margin. Further south, Segment 6C crosses the White River (and adjacent wetlands) immediately south of the Kirch WMA. This crossing would be approximately 100 linear feet. Since the average transmission line span length between structures is estimated to be 1,050 feet (**Section 2.2.1.2**), these surface waters would be avoided by all construction activities, and these stream crossing segments would easily be spanned to avoid impacts to wetlands and/or waters of the U.S. BMPs would be utilized to prevent water quality degradation of runoff during the construction phase.

Access for construction of transmission facilities would generally be along existing roads and two-tracks and would be specifically designated within the COM Plan for the project. Should these existing roads require improvement resulting in wetland impacts, a Section 404 permit would be required from the Corps prior to construction. In the event transmission line stringing locations would cause impacts to wetland areas during construction, this would also require a permit. The Corps' Nationwide Permit No. 12 – Utility Line Activities could be employed for project impacts to jurisdictional wetlands totaling less than 0.5 acre. If impacts greater than 0.5 acre would occur, then a Corps Individual Permit would be required. If needed, a detailed compensatory mitigation plan would be developed as a requirement of the *Stream Crossing and Wetlands Protection Plan* portion of the COM Plan, in addition to significant BMPs that would be implemented within all segments to avoid and/or minimize surface water quality impacts during the construction phase. However, since the only location where wetlands were observed was at the two crossing locations identified above, and existing improved access roads are present at both locations, it is unlikely that any new disturbance within a stream or riparian area would be necessary for construction of the transmission facilities, thus no impacts to live waters and wetlands are anticipated.

No adverse impacts to surface waters and wetlands are anticipated since all such waters can be spanned with no construction disturbance to the surface waters, and BMPs would be implemented and uniformly followed. However, if for some unforeseen circumstances impacts to wetlands cannot be avoided, but fall within the allowances of Nationwide Permit No. 12 – Utility Line Activities, impacts would be temporary and minor for construction related disturbances, but would not substantially degrade their function. If impacts to wetlands exceed the limits allowable under the Nationwide Permitting program, such that an Individual Permit is required, these impacts would be temporary and moderate. Impacts requiring an Individual Permit could result in adverse impacts to the function of wetland resources in the affected project areas, both

during and following the construction period. No other surface water resources are present within the Proposed Action.

<u>Surface Water Resources – Dry Washes</u>

A sizeable unnamed dry wash flowing into the closed basin of Jakes Valley occurs immediately south of the Robinson Summit Substation location. This dry wash, which originates within the foothills of the Egan Range east of the substation, would be crossed by the Falcon-Gonder loop-in line and Segment 6C. The wash would be spanned by the transmission facilities, and no portion of the Robinson Summit Substation would be placed in the wash; therefore no discharge of fill material would occur. BMPs would be utilized to prevent water quality degradation of runoff during the construction phase.

Between Jakes Valley and the White River Valley, Jakes Wash is crossed by the Proposed Action. Near the southern end of the White River Valley, the Proposed Action crosses Big Spring Wash approximately 4 miles northwest of the White River crossing south of Kirch WMA. Within Dry Lake Valley in Lincoln County, the Proposed Action crosses Coyote Wash, Bailey Wash, Silverhorn Wash, Fairview Wash, Porphyry Wash, and Red Rock Wash. Within Delamar Valley, the Proposed Action crosses Cottonwood Wash, Monkey Wrench Wash, Helene Wash, Delamar Wash, and Jumbo Wash. Finally, the Proposed Action crosses the Pahranagat Wash west of US-93 and approximately 3 miles south of Maynard Lake in southern Lincoln County. In addition to these larger named washes, the Proposed Action would cross hundreds of smaller, unnamed dry washes between Robinson Summit and Harry Allen Substations.

According to Levick et al. (2008), within the arid southwest, over 81 percent of all streams are intermittent or ephemeral washes. These dry washes support landscape hydrologic connections; stream energy dissipation during high-water flows (thereby reducing erosion and improving water quality); surface and subsurface water storage and exchange; groundwater recharge and discharge; sediment transport, storage, and deposition to aid in floodplain maintenance and development; nutrient storage and cycling; wildlife habitat (breeding, shelter, and foraging) and migration corridors; and support for vegetation communities to help stabilize stream banks (USFWS 1993; BLM 1998d). Some plant populations are specifically adapted to the conditions associated with these ephemeral aquatic ecosystems. They also help mitigate and control water pollution by regulating water quality filtering (Sonoran Institute 2007). Biological stressors to these systems include habitat loss, alteration, effluent discharge, degradation from decline in water quality, and changes in channel and flow characteristics (Pima County 2000). Bull (1997) noted that ephemeral streams are much more sensitive to anthropogenic disturbance than are perennial streams, and Levick et al. (2008) recommended the application of BMPs to prevent water quality degradation, in addition to employing a watershed-scale approach to land management decisions to insure the ecological services of these ephemeral streams are not compromised.

In order to prevent water quality and ecological impacts to these dry washes, no permanent transmission structures would be placed in any wash channel, and existing roads and crossings would be used to access the construction area. All washes would be spanned by the transmission facilities. During development of the COM Plan, specific wash crossing locations would be identified, and detailed BMPs would be established for crossing methods by any access roads to prevent water quality degradation and minimize the impacted area. Should improvements to any of these roads require placement of permanent fill material (such as culverts, headwalls, log structures, etc.), a Section 404 permit may be required. The conditions of Nationwide Permit No. 12, Utility Line Activities, allow for up to 500 linear feet and 0.5 acres

of disturbance at each crossing location, and it is unlikely that any crossing location would eclipse these limitations. The NDEP may also require a working in waterways permit for some crossings, and any authorizations would be acquired prior to the initiation of construction.

Because of the avoidance of impacts to wash systems, other than access road crossing locations, construction impacts to dry washes are anticipated to be temporary and negligible.

Surface Water Resources – Floodplains

Special flood hazard areas are present within portions of Segment 6C in Nye County and in Segment 11 in Clark County. These areas would be spanned by transmission facilities to the extent possible, and the placement of transmission line structures would be such as to prevent changes to flooding or erosion potential. Because of the relatively small long-term disturbance footprint of these structures (66 x 66 feet or 0.1 acre; **Section 2.2.1.2**), negligible alteration to the function of the floodplain in these areas is anticipated.

Groundwater Resources

The construction of the electric transmission facilities would not affect groundwater resources.

Operations, Maintenance, and Abandonment

Surface Water Resources

In the event that an operations, maintenance, or abandonment access road to any component of the Proposed Action transmission line facilities was deemed necessary in a jurisdictional wetland or ephemeral wash area during the service life of the project, this activity could be permitted under either Nationwide Permit No. 12 – Utility Line Activities (if the road was not previously permitted) or under Nationwide Permit No. 03 – Maintenance (if the road was permitted during construction). However, no impacts to surface water resources as a result of the Proposed Action are anticipated.

Groundwater Resources

The operation, maintenance, and abandonment of the transmission facilities would not affect groundwater resources.

4.2.2.1 Mitigation

Additional mitigation measures are not required. A detailed *Stream Crossing and Wetlands Protection Plan* would be developed as a component of the project's overall COM Plan.

4.2.2.2 Unavoidable Adverse Impacts on Water Resources

Unavoidable adverse impacts on water resources would be unlikely to occur as a result of surface disturbance associated with the Proposed Action. The implementation of BMPs would minimize potential water quality degradation and localized flooding associated with the transmission facilities. Although there are special flood hazard areas associated with the locations of some proposed transmission facilities that may be unavoidable, these impacts are not anticipated to be adverse, since the footprint of transmission line structures is negligible when compared to the total area of the special flood hazard zone that would be impacted.

4.2.2.3 Irreversible and Irretrievable Commitments of Resources

There would be no irreversible and/or irretrievable commitments of water resources as a result of the Proposed Action.

4.2.2.4 Relationship of Short-term Uses and Long-term Productivity

A minor amount of water resources would be affected during the short-term scope of project construction. Surface water features, such as ephemeral washes, would be temporarily disturbed during construction of the Robinson Summit Substation and the transmission line facilities. In the long-term horizon of the project, surface water features would be affected during maintenance activities and impacts would be negligible.

4.2.3 Action Alternative

Under the Action Alternative, the transmission line facilities would follow a parallel route to the Proposed Action, approximately 1,800 feet to the east within the SWIP Utility Corridor and includes Segments 6C, 8, 9B, 9C, 9D, and 11. Sub-alternative segments of the Action Alternative include Segment 9A instead of 9C as well as Segment 10 instead of Segments 9B, 9A, and 9D. A sub-alternative location for the substation would be the RSS-Site B area. The Action Alternative and sub-alternatives are discussed here.

Construction

Surface Water Resources – Live Waters and Wetlands

Waters of the U.S. impacts, including wetlands, associated with Segment 6C would be the same as the Proposed Action, except for the southern crossing location of the White River (south of Kirch WMA). Under the Action Alternative, the crossing location would occur further north, across a body of water known as the Whipple Reservoir, and would be approximately 810 linear feet. However, under both instances, the span length would be sufficient to avoid any impacts. The alignment of the Action Alternative Segment 6C through this area would not affect live waters and/or wetlands differently than the Proposed Action.

Surface Water Resources – Dry Washes

The majority of the dry wash crossing locations, both named and unnamed, are the same for both the Proposed Action and the Action Alternative. Although separated by approximately 1,800 feet, the character and function of the washes are not significantly different at any alignment location. The Segment 10 sub-alternative would cross Cedar Wash and Big Lime Wash within southeastern Delamar Valley, and then Kane Springs Wash five times in Kane Springs and Coyote Springs Valleys. Segments 9A and 9C both cross several small, unnamed dry washes in southern Lincoln County. The Falcon – Gonder 345 kV loop-in associated with RSS-Site B sub-alternative would cross two small, unnamed dry washes.

The types and degrees of impacts associated with these dry wash crossings would be the same for the Action Alternative as with the Proposed Action.

Surface Water Resources – Floodplains

Special flood hazard areas are present within portions of Segment 6C in Nye County and in Segment 11 in Clark County. Impacts to these areas would be the same as the Proposed Action.

Groundwater Resources

The construction of the transmission facilities would not affect groundwater resources.

Operations, Maintenance, and Abandonment

Surface Water Resources

In the event that a maintenance access road to any component of the Action Alternative was deemed necessary in a jurisdictional wetland or ephemeral wash area during the service life of the project, this activity could be permitted under either Nationwide Permit No. 12 – Utility Line Activities (if the road was not previously permitted) or under Nationwide Permit No. 03 – Maintenance (if the road was permitted during construction). However, no impacts to surface water resources as a result of the Action Alternative are anticipated.

Groundwater Resources

The operation, maintenance, and abandonment of the Action Alternative would not affect groundwater resources.

4.2.3.1 Mitigation

Mitigation for the Action Alternative would be the same as for the Proposed Action.

4.2.3.2 Unavoidable Adverse Impacts on Water Resources

Unavoidable adverse impacts on water resources would be unlikely to occur as a result of surface disturbance associated with the transmission line alternatives, since the implementation of BMPs would minimize potential water quality degradation and localized flooding. Although there are special flood hazard areas associated with some of the Action Alternative transmission facilities that may be unavoidable, these impacts are not anticipated to be adverse, since the footprint of transmission line structures is negligible when compared to the total area of the special flood hazard zone that would be impacted.

4.2.3.3 Irreversible and Irretrievable Commitments of Resources

As with the Proposed Action, there would be no irreversible and/or irretrievable commitments of water resources.

4.2.3.4 Relationship of Short-term Uses and Long-term Productivity

The relationship of short-term uses and long-term productivity would be the same as that for the Proposed Action as described in **Section 4.2.2.4**.

4.2.4 No Action Alternative

Under the No Action Alternative, surface water resources would not be impacted by construction or operation/maintenance activities. Drainages, streams, and wetlands would remain in their currently-functioning state and would not be affected.

4.3 Geology and Minerals

4.3.1 Indicators and Methods

The primary indicator for geology and minerals resources is the number and type of claims in the project area disturbance footprint.

4.3.2 Proposed Action

Construction

The transmission facilities (i.e., Robinson Summit Substation, Falcon Substation expansion, and transmission and telecommunication facilities) would be located on Quaternary basin-fill

deposits, Tertiary volcanics, Permian to Ordovician shallow marine sedimentary deposits, and Precambrian basement rocks. The transmission line facilities would cross up to 9 different mountain ranges and 11 different valleys. The construction of the transmission line facilities could locally alter surface topography.

There are presently no authorized mining claims, geothermal leases, coal authorizations, solar energy and wind ROWs, or oil shale leases present within 2 miles of the transmission facilities that could be impacted. There are 26 active oil and gas leases and 4 mining districts located within the same township, range, and section of the transmission facilities. The impacts to geology and minerals from the construction of the Proposed Action would be negligible.

Operations, Maintenance, and Abandonment

Access roads may actually increase accessibility to existing and any future authorized mining claims, geothermal leases, solar energy and wind ROWs, and oil shale leases. The anticipated level of impacts to geology and minerals from the operations and maintenance of the transmission facilities would be negligible.

4.3.2.1 Mitigation

Additional mitigation measures are not required.

4.3.2.2 Unavoidable Adverse Impacts on Geology and Minerals

Slight topographic modifications would cause minor unavoidable impacts on geology. There would be no unavoidable adverse impacts to mineral resources.

4.3.2.3 Irreversible and Irretrievable Commitments of Resources

The commitment of the proposed ROWs related to the Proposed Action could affect access to future mineral production at currently unknown locations near the proposed ROWs.

4.3.2.4 Relationship of Short-term Uses and Long-term Productivity

There currently are no known effects to geologic formations or long-term mineral resource productivity due to the construction and operation of the facilities in the proposed ROWs.

4.3.3 Action Alternative

Construction

Due to the relative similarity of the two action alternatives with regard to geologic resources, impacts under the Action Alternative would be the same as those discussed for the Proposed Action.

There are no authorized mining claims, oil and gas leases, coal authorizations, solar energy and wind ROWs, or oil shale leases present within 2 miles of the Action Alternative that could be impacted. The anticipated level of impacts to geology and minerals would be negligible for construction of the Action Alternative.

The anticipated level of impacts to geology and minerals would be long-term and minor for the construction of the Action Alternative.

Operations, Maintenance, and Abandonment

The anticipated level of impacts to geology and minerals from the operations, maintenance, and abandonment of transmission facilities and associated access roads would be negligible.

4.3.3.1 Mitigation

Additional mitigation measures are not required.

4.3.3.2 Unavoidable Adverse Impacts on Geology and Minerals

Unavoidable adverse impacts would be the same as for the Proposed Action.

4.3.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources would be essentially the same as for the Proposed Action.

4.3.3.4 Relationship of Short-term Uses and Long-term Productivity

Relationships of short-term uses and long-term productivity would be essentially the same as for the Proposed Action.

4.3.4 No Action Alternative

The No Action Alternative would result in no effect on geology and mineral resources at or near the proposed project.

4.4 Paleontological Resources

4.4.1 Indicators and Methods

The analysis of impacts to paleontological resources is based on a project-specific paleontological resources assessment that included a literature review of known resources, field survey, and assignment of paleontological sensitivity based on sediments. The following indicators were considered when analyzing potential impacts to paleontology:

- Known paleontological resources
- Proximity to geologic strata with potential to contain paleontological resources
- Depth of excavations associated with project components

Impacts to specific paleontological resources are not presented, as paleontological resources are generally located by active discovery during surveys, by chance during man-made disturbances, by exposure due to erosion, or other means. Known paleontological resources were reviewed and used to determine potential paleontological sensitivities as presented in **Section 3.4**.

4.4.2 Proposed Action

Construction

The Robinson Summit Substation would permanently disturb approximately 108 acres. Excavation would be up to 100 feet below surface. The Falcon Substation expansion would disturb 7 acres. The construction areas for the transmission line facilities would be 200 - 600 feet wide, depending on local terrain and topography conditions, with structures spaced approximately 900 to 1,600 feet apart. The structure footings would each be up to 12 feet in diameter and up to 30 feet in depth. Fiber optic regenerating stations associated with the transmission facilities would measure 30 by 40 feet within the ROW.

There is high potential (Reynolds 2007) for encountering North American Land Mammal Age mammal fossils in the surface Miocene sandstones during construction of the Robinson Summit Substation. Excavation depths are not relevant as the significant paleontological resources, if present, would likely be encountered at surface levels. There is low potential for encountering

paleontological resources at the Falcon Substation expansion area (BLM 2001a). Impacts to paleontological resources in this area would be negligible.

Potential impacts from the construction of the transmission line facilities over areas with potential for paleontological resources would be minimized by spanning most areas under the transmission line and disturbing relatively small areas with the support structures. Impacts to paleontological resources would be minor along the transmission line segments. If paleontological resources were encountered during construction activities related to the transmission facilities, mitigation measures described in **Section 4.4.2.1** would apply.

Operations, Maintenance, and Abandonment

No additional impacts to paleontological resources would occur as a result of operations, maintenance, or abandonment of the transmission line facilities.

4.4.2.1 Mitigation

1. A qualified and BLM-permitted paleontologist may make the determination, based on accumulation of information being learned from inspection and the evaluation of spoil piles and previous grading within areas of high sensitivity, that areas formerly determined high potential are actually low or undetermined where monitoring may be reduced.
2. Upon encountering a large deposit of bone, salvage of bone will be conducted with additional field staff and in accordance with modern paleontological techniques.
3. Fossils collected during the project will be prepared to a reasonable point of identification.
4. A report documenting the results of the monitoring and salvage activities and the significance of the fossils will be prepared.
5. Fossils collected during this work, along with the itemized inventory of these specimens, will be deposited in a museum repository for permanent curation and storage.

4.4.2.2 Unavoidable Adverse Impacts on Paleontological Resources

If construction activities encountered paleontological resources, these resources could be damaged or destroyed; this would constitute an unavoidable adverse impact to paleontological resources.

4.4.2.3 Irreversible and Irretrievable Commitments of Resources

Paleontological resources discovered during construction activities would be removed and this would be an irreversible commitment of these resources. However, these resources would be curated and available for study and/or exhibit providing a beneficial commitment of these resources.

4.4.2.4 Relationship of Short-term Uses and Long-term Productivity

In the short term, paleontological resources encountered during construction activities could be destroyed or degraded. However, implementation of mitigation measures would minimize these potential impacts. There would not be impacts to long-term productivity.

4.4.3 Action Alternative

Construction

These impacts would be essentially the same as those described under the Proposed Action, except for sub-alternative Segment 10 and the RSS-Site B sub-alternative location.

Potential for encountering paleontological resources along a portion of sub-alternative Segment 10 would be high below surface as it contacts Pliocene sediments. Potential for encountering paleontological resources at the RSS-Site B sub-alternative location would be low. If paleontological resources were encountered during construction activities, mitigation measures described in **Section 4.4.2.1** would apply.

Operations, Maintenance, and Abandonment

No additional impacts to paleontological resources would occur as a result of operations, maintenance, or abandonment of the transmission facilities.

4.4.3.1 Mitigation

The mitigation would be the same as described in **Section 4.4.2.1**.

4.4.3.2 Unavoidable Adverse Impacts on Paleontological Resources

If construction activities encountered paleontological resources, these resources could be damaged or destroyed; this would constitute an unavoidable adverse impact to paleontological resources.

4.4.3.3 Irreversible and Irretrievable Commitments of Resources

Paleontological resources would be removed during construction activities and this would be an irreversible commitment of these resources. However, these resources would be curated and available for study and/or exhibit providing a beneficial commitment of these resources.

4.4.3.4 Relationship of Short-term Uses and Long-term Productivity

In the short term, paleontological resources encountered during construction activities could be destroyed or degraded, however implementation of the mitigation measures would minimize these potential impacts. There would not be impacts to long-term productivity.

4.4.4 No Action Alternative

Under the No Action Alternative, there would be no impacts to paleontological resources.

4.5 Soils

4.5.1 Indicators and Methods

Indicators used to assess potential impacts to soil resources include the following:

- Acres of soil disturbance and acres to be reclaimed
- Suitability of growth medium for reclamation

4.5.2 Proposed Action

Physical Changes to Soil Resources

Surface disturbance and removal of soil resources for replacement during reclamation activities would result in direct impacts within the project area. Physical and chemical changes to the soil would be expected to be long-term and minor and would occur by mixing during initial salvage operations and when placed in stockpiles for future reclamation use. Soil that is restored to disturbed areas immediately after construction would begin to conform to more natural conditions. Soil that is stored for extended periods of time in stockpiles for future reclamation use would continue to be affected by compaction and lack of aeration.

Microorganisms such as bacteria and fungi are important in the decomposition of biological materials and the formation and improvement of soil itself (AEHS 2002). Natural processes, such as dust blowing on the site from other areas, would re-inoculate the site with these microorganisms. Root penetration and the development of a rhizosphere environment are also thought to perpetuate the growth of microorganisms (AEHS 2002). Microbiotic soil crusts are recognized as an important aspect of soil quality (BLM 2008a) and damage to these crusts would occur during disturbance, reducing soil quality by increasing erosion potential and changing the properties of the associated soil.

Direct physical impacts to soil resources include compaction and crushing of the soil and soil crust by equipment during salvage, and stockpiling during construction and subsequent replacement during reclamation. Physical effects of soil compaction would be short-term, minor to moderate, and include reduced permeability and porosity, damage to microbiotic crusts, increased bulk density, decreased available water holding capacity, increased erosion potential, reduced gaseous exchange, and loss of soil structure.

Productivity

Productivity is defined as the rate of vegetation production per unit area, usually expressed in terms of weight or energy. Primary factors that influence natural soil productivity include length of growing season, climate and soil depth, and production/fertility. Soil erosion, combined with other impacts from disturbances such as soil compaction, can reduce soil quality and soil productivity (USDA 2007b). As identified in the Ely RMP (BLM 2008a), soil productivity and soil quality are generally stable, but some areas associated with management actions (such as weeds, fire, livestock, recreation, travel, etc.) show declines.

Production and fertility of the stockpiled growth medium would be directly affected by mixing of the soils during salvage operations. Incorporation of slash and vegetative materials into the growth medium during stripping (i.e., vertical mulch) would increase the organic matter content of the material and elevate the production potential. This natural mixing of soils with low coarse fragment content together with soils of high coarse fragment content would serve to dilute the coarse fragment content and is likely to increase the production potential of the growth medium.

The total volume of growth medium available for reclamation activities would come from salvage of material from disturbed areas. The quality of these mixed salvage soils is likely to be similar to or slightly better than the characteristics of the individual soils prior to disturbance.

Recovered soils available would be salvaged from all disturbance areas, including permanently disturbed areas that would not be reclaimed, and would be expected to provide suitable depth to achieve adequate and uniform coverage for seedbed preparation and reclamation. Growth

medium suitability parameters have been identified in **Chapter 3** and revegetation species would meet the criteria set by the BLM.

Soil compaction can contribute to soil erosion and reduced soil productivity. Soils in the Proposed Action area characteristically have a high percentage of coarse fragments, which would provide moderate support for heavy equipment by reducing the amount of compression on the underlying soils. Productivity loss due to compaction influences would be negligible to minor along the transmission facilities with implementation of the Proposed Action.

Soil Loss/Erosion

A portion of the soils within the Proposed Action area would be physically lost during salvage and replacement operations through mechanical and erosion effects. Soil mixing and loss of some soil would also occur during final growth medium distribution and completion of reclamation.

Soil erosion potential is determined based on physical soil characteristics, k-factor rating, and slope. Areas located on steep slopes are inherently susceptible to erosion. Slope values for reclaimed areas under the Proposed Action would tend to have few steep areas. The majority of reclaimed areas identified in the Proposed Action area would incorporate a generally flat to gently sloped surface during regrading and reclamation activities.

Erosion would occur in areas of new or increased surface disturbance. Potential for erosion would be increased on disturbed areas after soil salvage operations due to removal of the vegetative cover and the loss of surface soil structure. Erosion of growth medium after redistribution on regraded sites would also have a greater potential until the soil is stabilized by successful revegetation. Soil characteristics identified in **Section 3.5.4** suggest that disturbed areas would experience moderate to high erosion potential, either by wind or water. Wind erosion hazard is expected to be low to moderate due to characteristic soil features, such as the high percentage of coarse fragments throughout the soil profiles of many soils in the project area (USDA 2007c). Windblown dust would result from disturbance of fine-textured soils during construction activities and until completion of reclamation.

Summary

Potential disturbance impacts to soil resources for the various segments and components of the transmission facilities are listed in **Table 4.5-1**.

TABLE 4.5-1 ACRES OF SOIL DISTURBANCE FOR THE PROPOSED ACTION

PROJECT ELEMENTS	ACRES OF SOIL RESOURCES		
	POTENTIALLY DISTURBED (200–foot ROW for Transmission Line)	SHORT-TERM DISTURBANCE/ RECLAIMED	LONG-TERM DISTURBANCE*
Segment 6C	2,493	2,304	189
Segment 8	1,354	1,333	21
Segment 9A	196	158	38
Segment 9B	263	259	4
Segment 9D	469	322	147
Segment 11	935	666	269
Other Line Components (e.g., Access roads outside of ROW, Fiber-Optic Regeneration Sites, Electric Power Service, and Material/Construction Yards)	1,927	1,923	4
Robinson Summit Substation, includes 50-foot wide access road	153	41	112
Falcon-Gonder Loop-in	19	18	1
Falcon Substation Expansion	7	0	7

*Long-term transmission line structure disturbance area or facility footprint area. For transmission line structures, calculations evaluated flat and rough terrain based upon USGS map level review, 0.1 acre for flat terrain and 1.0 acre for rough terrain of long-term disturbance per structure. Also includes 1.0 acre for structures in desert tortoise habitat and permanent access roads in desert tortoise habitat.

The majority of the impacts would be temporary, although the actual footprints of the structures and the substations would result in permanent impacts to soil resources. Cutting of trees and removal of vegetation may occur, but downed vegetation and undisturbed low vegetation would be left in place within this disturbance corridor, where practicable, to serve as soil protection, erosion control, and vertical mulch. Vegetation would only be cleared to the extent necessary, minimizing impacts to soil resources.

Construction

At each transmission line structure site, typical temporary work areas would be approximately 1 acre in flat terrain (0.1 acre permanent disturbance) and 2 acres in steep terrain (1 acre permanent disturbance), but the size may vary depending upon topography. When practicable, access within the work area would be via overland travel, with minimal to no grading required in the temporary work areas. Soil resources would not be salvaged from temporary work areas unless these areas would be graded, then soil would be salvaged from the areas to be graded for reuse during reclamation. Soil would typically not be salvaged from areas to be permanently disturbed.

Work areas for tensioning equipment and pulling equipment would be approximately 5.4 acres and would be required at each angle point along the transmission line. These locations could require larger, less symmetrical pulling and tensioning sites for construction that occurs in steep or rough terrain.

After project construction, all work areas identified as temporary disturbance on the structure location drawings would be reclaimed and salvaged topsoil would be respread during

reclamation. No new off-site borrow areas would need to be developed specifically for construction of the transmission line facilities.

With implementation of growth medium salvage and reuse practices, soil conservation measures, BMPs, and other proposed operating procedures, the impacts to the temporarily disturbed acres of this resource would be site-specific, temporary, and moderate. The remaining acres would be reclaimed to the extent possible except for the permanently disturbed areas taken out of productivity (i.e., Robinson Summit Substation, Falcon Substation Expansion, transmission structure foundations and anchors).

Operations, Maintenance, and Abandonment

Long-term periodic maintenance to the transmission line facilities may require access to the linear corridors and substations via existing roads and may result in temporary disturbance; however, this effect would be minor to negligible.

4.5.2.1 Mitigation

1. Ensure that soils are salvaged and there is placement of growth medium on sites ready for immediate reclamation to minimize the need for stockpiling the material. The underlying subsoil material will remain in place or be used elsewhere.
2. Design access roads to fit the terrain by avoiding unstable slopes and highly erodible conditions to the extent practicable to protect soils and prevent excessive sedimentation. These protective measures include, but are not limited to, mulch, matting, or slope length shortening (State of Nevada 1994).
3. When soils are wet, construction, operation, and maintenance activities will be restricted so as to properly support construction or maintenance equipment (i.e., when heavy equipment creates ruts in excess of 4 inches deep over a distance of 100 feet or more in wet or saturated soils). This standard will not apply in areas with silty soils, which easily form depressions even in dry weather. Where the soil is deemed too wet, one or more of the following measures will apply:

- Re-route all construction or maintenance activities around the wet areas so long as the route does not cross into sensitive resource areas.
- If wet areas cannot be avoided, implement BMPs for use in these areas during construction and improvement of access roads, and their subsequent reclamation. This includes use of wide-track or balloon-tire vehicles and equipment, or other weight dispersing systems approved by the appropriate resource agencies. It also may include use of geotextile cushions, pre-fabricated equipment pads, and other materials to minimize damage to the substrate where determined necessary by resource specialists.
- Limit access of construction equipment to the minimum amount feasible, remove and separate topsoil in wet or saturated areas and stabilize subsurface soils with a combination of one or more of the following: grading to dewater problem areas, utilize weight dispersion mats, and maintain erosion control measures such as surface filling and back-dragging. After construction is complete, re-grade and re-contour the area, replace topsoil, and reseed to achieve the required plant densities.

4. Vegetation will be cleared and the construction ROW will be graded only to the extent necessary. Vegetation within the ROW will be cut or scraped at or near the ground level. Except for the area to be excavated, the vegetative root system and subsurface soils will be left intact to the greatest extent practicable. This will help stabilize the soils within the ROW during construction. ROW boundaries will be clearly staked or flagged and no disturbance would be allowed beyond the limits.

4.5.2.2 Unavoidable Adverse Impacts on Soils

Native soil conditions on disturbed areas would be lost due to the breakdown of soil structure, adverse effects to microorganisms, and discontinuation of natural soil development.

4.5.2.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitment of resources includes the disturbance of soil resources with implementation of the Proposed Action. The permanent disturbances associated with the unreclaimed portions of the ROWs would produce an irreversible commitment of soil resources disturbed by these features.

An irretrievable commitment of soils salvaged and utilized in reclamation would initially demonstrate a decrease in infiltration and percolation rates, decrease in available water holding capacity, and loss of organic matter. These effects would slowly be restored by natural soil development processes.

4.5.2.4 Relationship of Short-term Uses and Long-term Productivity

Reclamation of the temporarily disturbed areas would return these soils to long-term productivity by being utilized as growth medium in reseeded areas, while unreclaimed areas would be permanently eliminated from potential production.

4.5.3 Action Alternative

The general construction activities and impacts to soil resources with implementation of the Action Alternative would be the same as those for the Proposed Action, with variations in location (soil types) and acreages. If sub-alternative Segment 10 were utilized, it would require additional disturbances to soil resources as this alternative component of the Action Alternative would be 10 miles longer. If the RSS-Site B sub-alternative location were selected, there would be an increase in short-term disturbance (including longer Falcon to Gonder loop-ins for the 345 kV lines and access roads) but less long-term disturbance than the Proposed Action Robinson Summit Substation and a shorter Segment 6C. **Table 4.5-2** shows a breakdown of the disturbance areas.

TABLE 4.5-2 ACRES OF SOIL DISTURBANCE FOR THE ACTION ALTERNATIVE

PROJECT ELEMENTS	ACRES OF SOIL RESOURCES		
	POTENTIALLY DISTURBED (200-foot ROW for Transmission Line)	SHORT-TERM DISTURBANCE/ RECLAIMED	LONG-TERM DISTURBANCE*
Segment 6C	2,493	2,304	189
Segment 8	1,354	1,333	21
Segment 9A – Sub-Alternative	196	168	38
Segment 9B	263	263	4
Segment 9C	160	131	29
Segment 9D	469	322	147
Segment 10 – Sub-Alternative	1,115	899	216
Segment 11	957	685	272
RSS-Site B Sub-Alternative, includes access roads	120	45	75
Falcon-Gonder Loop-in for the RSS-Site B Sub-Alternative	163	158	5
Other Line Components (e.g., Access Roads outside of ROW, Fiber-Optic Regeneration Sites, Electric Power Service, and Material/Construction Yards)	Same As Proposed Action		
Robinson Summit Substation, includes 50-foot wide access road			
Falcon-Gonder Loop-in			
Falcon Substation Expansion			

*Long-term transmission line structure disturbance area or facility footprint area. For transmission line structures, calculations evaluated flat and rough terrain based upon USGS map level review, 0.1 acre for flat terrain and 1.0 acre for rough terrain of long-term disturbance per structure. Also includes 1.0 acre for structures in desert tortoise habitat and permanent access roads in desert tortoise habitat.

After project construction, all work areas identified as temporary disturbance on the structure location drawings would be reclaimed and salvaged topsoil would be respread during reclamation. No new off-site borrow areas would need to be developed for construction of the transmission line facilities.

With implementation of growth medium salvage and reuse practices, soil conservation measures, BMPs, and other proposed operating procedures, the impacts to the temporarily disturbed acres of this resource would be site-specific, temporary, and moderate. The remaining acres would be reclaimed to the extent possible except for the permanently disturbed areas taken out of productivity (i.e., Robinson Summit Substation, Falcon Substation expansion, and transmission structure foundations and anchors).

Operations, Maintenance, and Abandonment

Impacts to soil resources for the Action Alternative would be similar to those described in **Section 4.5.2**, although location (soil types) and acreage impacts would be different.

4.5.3.1 Mitigation

Mitigation measures necessary with implementation of the Action Alternative would be similar to those identified in the Proposed Action.

4.5.3.2 Unavoidable Adverse Impacts on Soils

The unavoidable adverse physical impacts to soil resources would be similar to those identified in the Proposed Action (**Section 4.5.2.2**).

4.5.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitment of resources includes the disturbance of soil resources with implementation of the Action Alternative. Numerous acres of soil resources would be disturbed with implementation of the Action Alternative. The permanent disturbances associated with the unreclaimed portions of the ROWs would produce an irreversible commitment of soil resources disturbed by these features.

An irretrievable commitment of soils salvaged and utilized in reclamation would initially demonstrate a decrease in infiltration and percolation rates, decrease in available water holding capacity, and loss of organic matter. These effects would slowly be restored by natural soil development processes.

4.5.3.4 Relationship of Short-term Uses and Long-term Productivity

Short-term use and long-term productivity would be similar to the Proposed Action (**Section 4.5.2.4**).

4.5.4 No Action Alternative

Under the No Action Alternative, local effects to soil resources from the construction of these facilities would be eliminated.

4.6 Air Resources

Air quality impacts associated with the project are assessed for the construction and operational phase. The primary indicators of air quality impacts will be the emissions of air pollutants, the federal ambient air quality standards (NAAQS), and the Nevada state ambient air quality standards (AAQS) documented in **Section 3.6.2** that define allowable ambient concentrations of potential air pollutants. Indicators include:

- Emissions in tons per year for each type of regulated pollutant
- Compliance with NAAQS and Nevada AAQS

4.6.1 Proposed Action

Construction

The construction activities would generate air pollutant emissions. Sources of dust emissions would include the earth work for substations, construction yards, transmission line structures, and access roads; wind erosion from those areas where vegetation would be removed; active earth moving or ground breaking activities including digging, blasting, and ground contouring; the concrete batch plants and activities associated with setting foundations for substation structures and transmission line structures; construction traffic on unpaved roads, and potentially tracked out soil material resuspended by paved road traffic. Another source of air pollutant emissions would be exhaust from internal combustion engines associated with the project (mobile construction equipment, stationary engines including generators and construction support equipment, and emissions from vehicles for workers and deliveries to and from the project site).

Robinson Summit Substation construction and the expansion of the Falcon Substation would include most of the emission types described above. Little public impact would be expected near either substation because of the lack of regular human activity in the vicinity of those areas. The transmission facilities would be within, along, or adjacent to the SWIP Utility Corridor to the Harry Allen Substation. The only places under the Proposed Action where the facilities would be constructed within 3 miles of a residence or area of regular human activity would be on the southern portion. The southern portion of Segment 9D and the northern portion of Segment 11 are adjacent to the Coyote Springs residential and commercial development which has features as close as 1 mile from the transmission line facilities. Further south, Segment 11 would also be constructed within 2 miles of the Moapa Indian Reservation.

Construction yards or staging areas would generally be located on private property. They would produce emissions from wind erosion where soils are disturbed, and dust and combustion exhaust from material movement and management. The three identified construction yards would be located on property already used for industrial purposes, except for the southern most yard that would occur on public land administered by the BLM, within the already permitted ROW area around the existing Crystal Substation. The Ely yard is presently a working rock pit, so no increase in impacts would be expected in any areas of regular human activity, including at the nearest residence one tenth of a mile away. Similarly, little to no increase in air pollutant impacts would be expected near the Caliente yard on the old golf course grounds, where the nearest residences would be three tenths of a mile away across the highway. There are no residences or areas of regular human activity near the third yard at the NV Energy's Crystal Substation.

The equipment used to construct the support structures and install the transmission line facilities would emit exhaust and generate dust. That equipment is expected to include a helicopter for placing structures and pulling lines, trucks to string and tension line components, cranes, excavators, bucket trucks, bulldozers, scrapers, concrete batch plants, concrete trucks, water trucks, and other equipment typically associated with medium duty construction activity. Employees commuting in vehicles to the work site and trucks delivering equipment would generate exhaust and some dust. The equipment used and the number of employees needed would be the same no matter which route (Proposed Action or Action Alternative) was chosen. The construction duration would vary only minimally with the selected alternative, proportional to the linear distance or disturbed acreage.

Table 4.6-1 shows the estimated emissions of criteria air pollutants during the construction process. The most significant contributors to construction emissions would be the exhaust from construction equipment, windblown dust from areas where ground was disturbed, employee commuter tailpipe emissions, and dust generated by the activities of the construction activities. The estimate of dust from exposed ground calculations very conservatively assumes that half of all project areas could be exposed at any one time.

TABLE 4.6-1 CRITERIA AIR POLLUTANT EMISSIONS (TONS/YEAR) OVER THE TWO YEAR CONSTRUCTION DURATION

SOURCE	VOCS	CO	NO_X	PM_{10}	SO_2
Equipment Exhaust	48.9	229.3	829.5	45.2	0.8
Dust Generated by Construction Site Traffic and Heavy Equipment Activity	-	-	-	182.2	-
Windblown Dust from Exposed Ground	-	-	-	1,536.3	-
Commuter Tailpipe Emissions	12.3	130.2	10.0	0.3	0.2
Concrete Batch Plant	-	-	-	4.3	-
Generators	0.6	1.5	3.4	0.5	0.4
TOTAL	**61.8**	**361.0**	**842.9**	**1,768.8**	**1.4**

Those temporary emissions would occur over the 24 month duration of the construction process, across a wide area hundreds of miles long affected by the construction process. Along the transmission line route, active work would not be expected to affect any individual area (other than construction yards or the stationary substations) for more than a number of weeks. The duration of activity building the Robinson Summit Substation would be a little longer. The emissions profile at the Falcon Substation would be expected to resemble that of points along the project's linear component. Given the lack of population or regular human activity near project activity areas, construction impacts would be minor to negligible, with only brief periods when impacts would approach moderate levels in the few areas of regular human activity within a mile of project construction activity.

Due to the distance and short-term duration of construction, any air quality impacts at Great Basin National Park would be minimal and negligible.

Operation, Maintenance, and Abandonment

Corona activity on electrical elements in open air could produce limited amounts of gaseous ozone or NOx effluent, on a similar but much smaller scale than thunderstorms which can briefly raise surface ozone concentrations. Heat generating construction equipment including welders and combustion exhaust could also produce minimal quantities of ozone and slightly more ozone precursors. Ozone is naturally occurring in the air, with levels potentially elevated by emissions of gaseous air pollutants and photochemical reactions enhanced by solar radiation. Ozone and NOx levels in the project area are in attainment or unclassified. The emissions resulting from the project would have negligible effects on the local or regional ozone or NOx concentrations.

Sodium hexafluoride (SF_6) would be used as a gaseous dielectric medium in 14 system circuit breakers. Emissions of SF_6 are estimated at a maximum of 14 pounds per year. Atmospheric reactions to those releases would potentially contribute to greenhouse gases by leading to the formation of 167 tons of CO_2 equivalent per year.

Ground disturbance along the ROW access road would be 24 feet wide and would be subject to wind erosion. Maintenance surveys would be expected to result in dust and exhaust emissions from routine checks by vehicles along that linear access road and at the project substation components. Maintenance would be performed as necessary, resulting in emissions types like those described during the construction phase. Maintenance efforts would be intermittent,

generally of short duration, and would not approach the level of activity described during the construction phase.

Table 4.6-2 shows the maximum annual criteria air pollutant emissions anticipated during the operational phase. These estimates are based upon the assumption of 2,000 miles of unpaved road travel and 5,000 miles of paved road travel for maintenance surveys and routine maintenance, and heavy equipment maintenance activity at up to one tenth the activity level during construction.

TABLE 4.6-2 CRITERIA AIR POLLUTANT EMISSIONS (TONS/YEAR) DURING THE PROJECT'S OPERATIONAL PHASE

SOURCE	VOCS	CO	NO_X	PM_{10}	SO_2	SF_6
Equipment Exhaust	4.9	22.9	82.9	4.5	0.1	0.007
Dust Generated by Maintenance and Operation Site Traffic	-	-	-	18.2	-	-
Windblown Dust from Exposed Ground	-	-	-	466.8	-	-
Commuter Tailpipe Emissions	1.2	13.0	1.0	0.0	0.0	-
Concrete Batch Plant	-	-	-	0.4	-	-
Generators	0.1	0.2	0.3	0.1	0.0	-
TOTAL	**6.2**	**36.1**	**84.2**	**490.0**	**0.1**	**0.007**

Reclamation of impacts during construction would reduce the acreage of exposed (i.e., not vegetated) ground along transmission line facilities created during the construction phase down to an access road within desert tortoise habitat, plus 108 graveled acres at the Robinson Summit Substation and 7 more graveled acres than currently disturbed at the Falcon Substation. Total acreage with permanently disturbed ground surfaces potentially opened to wind erosion as a result of this project would be approximately 222 acres under the Proposed Action. That would reduce the acreage with ground disturbance that could potentially cause windblown dust from the construction phase as the project becomes operational. Isolated impacts from dust could persist near the remaining areas where transmission facilities would feature soil disturbances. Mitigation measures described in this section would minimize those emissions. Operation, maintenance, and potential abandonment of the transmission facilities would have negligible direct impacts on air quality.

The Proposed Action would potentially significantly reduce the rate of air pollution emissions per unit of energy regionally by providing a mechanism to bring renewable energy sources to the market. The proposed transmission line facilities would improve the ability for delivering solar, wind, geothermal, or other renewable and potentially non-polluting energy sources to the regional consumer base. That would make those renewable energy options more practical to develop by making the energy they could produce more affordable to deliver, and therefore more realistic alternatives to traditional fossil fuel energy facilities that generate significant quantities of greenhouse gases and contribute to climate change concerns.

Clean Air Act Conformity

The Clean Air Act of 1990 requires federal agencies to ensure their actions conform to the Act's requirements and federally enforceable plans including State Implementation Plans (SIPs). The conformity assessment process ensures that federal agency actions would not cause or

significantly contribute to an exceedance of ambient air quality standards, and would not delay timely progress toward compliance with ambient air quality standards in areas where they are not currently being met.

Project construction impacts, described above, would be temporary in nature and minor to moderate in magnitude. Those emissions would not be sufficient to cause any new violations of ambient air quality standards, or to significantly contribute to CO levels or adversely affect plans to attain CO standards in the CO non-attainment area at the southern terminus of the project in Clark County, the only section of the project area that is not currently meeting federal or state ambient air quality standards.

Direct project operational impacts on air quality would be minimal, not adversely affecting compliance or plans to attain compliance anywhere in the project area. Indirectly, the Proposed Action would support plans to attain ambient air quality standards in areas not yet attaining those standards, and also enhance regional air quality by supporting practical delivery of renewable energy onto the local energy grid.

4.6.1.1 Mitigation

Construction:

1. Construction staging areas will not be placed within 500 feet of residences.
2. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard, which is the distance from the top of the truck bed in the material being hauled.
3. Sweep streets of visible soil material carried onto adjacent paved public streets.

Mobile and Stationary Source Controls:

1. Reduce construction-related trips of workers and equipment, and unnecessary idling from heavy equipment.
2. Prohibit any tampering with engines to increase horsepower, and require continuing adherence to manufacturer's recommendations.
3. If practicable, lease new, clean equipment meeting the most stringent of applicable Federal or State Standards.
4. Require low sulfur diesel fuel (15 parts per million), if available.
5. Locate diesel engines, motors, and equipment as far as possible from residential areas and sensitive receptors (schools, daycare centers, and hospitals).

4.6.1.2 Unavoidable Adverse Impacts

The Proposed Action would result in temporary construction impacts of fugitive dust and engine exhaust and limited long-term air quality impacts from emissions of air pollutants resulting from maintenance operations and conductors as described above.

4.6.1.3 Irreversible and Irretrievable Commitments of Resources

The irreversible commitment of air resources would be limited to exhaust emissions associated with construction of the project, and to a much lesser degree with the maintenance and operation of the project components. Those emissions would represent a negligible, temporary emission of greenhouse gases, and ongoing emissions of minimal greenhouse gases or greenhouse gas precursors like SF_6.

The Proposed Action would potentially allow NV Energy to bring to market low or zero emissions renewable energy sources in place of traditional fossil fuel fired energy sources that would emit greenhouse gases. Though the project would help reduce future climate change, the potential phasing in of renewable energy options possible by this project would have negligible effect on climate change. On a global scale, greenhouse gases previously emitted, or to be emitted in the future, would continue to have the potential to affect the climate well into the future.

4.6.1.4 Relationship of Short-term Uses and Long-term Productivity

There would be short-term air quality impacts from construction of the facilities, which would not affect the long-term productivity characteristics or air quality conditions of the area. The contribution of the project to the local and regional power grid would potentially support low or non-impacting renewable energy development, which could aid the local economy without adversely affecting local or regional air quality.

4.6.2 Action Alternative

The Action Alternative would result in the same types of impacts described above, along a slightly different linear route. The Action Alternative route would be along the SWIP Utility Corridor, with potential sub-alternative deviations described as Segment 9A or Segment 10 options. The RSS-Site B sub-alternative would be located approximately 4 miles south of the Robinson Summit Substation location. The differences in emissions from those reported under the Proposed Action would be less than 5 percent. The Action Alternative or its sub-alternative deviations would not bring the project in any closer proximity to areas of regular human activity, nor would it result in any appreciable difference in project air quality impacts.

4.6.2.1 Mitigation

Mitigation would be similar to that described under the Proposed Action.

4.6.2.2 Unavoidable Adverse Impacts

The Action Alternative would result in temporary construction impacts of fugitive dust and engine exhaust and limited long-term air quality impacts from emissions of air pollutants resulting from maintenance operations and conductors as described above.

4.6.2.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources would be similar to that described under the Proposed Action.

4.6.2.4 Relationship of Short-term Uses and Long-term Productivity

Short-term uses and long-term productivity would be similar to that described under the Proposed Action.

4.6.3 No Action Alternative

The No Action Alternative would not result in any construction or operational air emissions associated with the ON Line Project. The only changes in air quality impacts in the local area would come from future projects or alternative uses of the land. However, if the proposed transmission line facilities were not built, it would be more difficult to bring renewable energy projects in eastern Nevada to the market. The cost of delivering renewable energy would remain prohibitive without the proposed transmission line, and NV Energy's and the state's goal for renewable energy as a significant component in the regional energy market would be

challenged. The expected electricity demand would need to be satisfied from other sources, including potentially from traditional fossil fuel fired power plants that could significantly contribute to ambient air quality impacts and greenhouse gas buildup potentially accentuating climate change concerns.

4.6.4 Climate Change

Climate change analysis generally is comprised of an evaluation of several interrelated broad-based factors, such as greenhouse gas (GHG) emissions, land use management practices, and the albedo effect (measurement of how strongly an object reflects light from light sources). Currently, BLM is unaware of a scientifically proven and widely accepted tool/method which provides for utilizing the analysis just mentioned and applies that analysis to a specific action or project to quantify specific climatic impacts caused by a specific action or project.

As a consequence, a pertinent quantifiable impact assessment to climate change caused by the proposed project's related anthropogenic activities cannot be determined. Additionally, it should be noted that specific levels of significance have not yet been established. Therefore, climate change analysis for the purpose of this document is primarily limited to accounting and disclosing of factors that contribute to climate change.

The methodology to assess impacts to climate change under NEPA, however, is continuing to evolve as consensus forms as to how best to evaluate such effects on proposed action-specific and cumulative levels. The CEQ published draft guidance on February 18, 2010 for Federal agencies to improve their consideration of the effects of GHG emissions and climate change in their evaluation of proposals for Federal actions under NEPA. For example, the CEQ proposes that agencies should consider the direct and indirect GHG emissions from the action and to quantify and disclose those emissions in the environmental document (40 CFR 1508.25). The CEQ further proposes that agencies should consider mitigation measures to reduce proposed action-related GHG emissions from all phases and elements of the proposed action and alternatives over its/their expected life, subject to reasonable limits based on feasibility and practicality. Qualitative evaluation of potential contributing factors is included where appropriate and practicable. GHG emissions are estimated for the Proposed Action. An increase in unsequestered GHG emissions would lead to incrementally increased GHG concentrations in the atmosphere. This in turn has the potential to contribute to further manifestations of climate change.

4.6.4.1 Proposed Action

The construction effort associated with the Proposed Action would emit GHGs during the construction period, which could last up to 24 months, primarily from the exhaust of equipment and transportation of employees and materials. **Table 4.6-3** provides an estimate of cumulative CO_2 emissions associated with the construction phase of the project. Emissions would be temporary in nature and would cease when the construction phase was completed.

For the ON Line Project, this section carefully considers detailed information about the potential for construction-, operation-, maintenance- and decommissioning-related activities to emit GHGs and, thereby, contribute meaningfully to global warming in light of the combined emissions of other broad-scale causes of climate change. GHG emissions are quantified and set forth in **Tables 4.6-3** and **4.6-4**.

Although it is doubtful that this individual project, standing alone, could result in significant climate change effects, this analysis considers the "incremental" impact of ON Line Project emissions as a possible contributor, together with the incremental impacts of other past,

present, and reasonably foreseeable actions, to contribute to global climate change, which intrinsically is a cumulative issue (see **Section 5.6.7**). Mitigation measures are also considered.

Although the system to deliver adequate and reliable electricity supply is complex and variable, it operates as an integrated whole to meet demand, such that the dispatch of a new source of generation generally curtails or displaces one or more less efficient or less competitive existing sources. The ON Line Project would provide utility-scale means to transport existing and proposed sources of energy, including renewable energy. As analyzed below, construction of the ON Line Project would involve the use of construction equipment and operation of motor vehicles and operation of the ON Line Project would involve the use of fossil fuels, at least to the extent required to operate any back-up generators. Thus, construction and operation of the ON Line Project would produce nominal amounts of GHGs.

Construction of industrial facilities requires coordination of numerous equipment and personnel. The estimated 24-month construction period for the ON Line Project would require on-site construction activities that would result in short-term, unavoidable increases in vehicle and equipment emissions, including GHGs. The GHG emissions estimate, for the entire construction period, is provided in **Table 4.6-3**.

TABLE 4.6-3 ESTIMATED GREENHOUSE GAS AIR EMISSIONS (TONS/YEAR) OVER THE TWO YEAR CONSTRUCTION DURATION

EMISSION	TONS
CO_2	9,791
CO	361
NOx	843
PM	1,769
SO_2	1
VOC	62

In addition to the direct emission of GHGs, construction of the ON Line Project would result in approximately 800 acres of surface disturbance, essentially clearing of land and complete removal of vegetation. This would reduce the ongoing natural carbon uptake by vegetation. According to a study conducted in the Mohave Desert, the desert may uptake carbon in amounts as high as 100 grams per square meter per year (Wohlfahrt et al. 2008). Using this data and applying it to the ON Line Project, the maximum equivalent loss in carbon uptake for the Proposed Action would be about 1,442 metric tons (MT) of CO_2 per year.

The operational phase would include SF_6 loss from the substation condensers that would be expected to result in an additional 167 tons of CO_2 equivalent per year in the atmosphere. Maintenance activities would include vehicular travel and construction activities which would release greenhouse gases. **Table 4.6-4** provides an estimate of annual CO_2 emissions estimated per year for the operational phase of the project. The CO_2 emission calculations assume 5,000 miles of paved road travel, 2,000 miles per year of unpaved road travel, and maintenance/construction activity at one tenth of the level during the project's construction phase.

TABLE 4.6-4 ESTIMATED GREENHOUSE GAS AIR EMISSIONS (TONS/YEAR) DURING THE PROJECT'S OPERATIONAL PHASE

EMISSION	TONS
CO_2	1,064
CO	36
NOx	84
PM	339
SF_6	0.007
SO_2	0.1
VOC	6

4.6.4.2 Action Alternative

Climate change impacts would be essentially the same as those described under the Proposed Action.

4.6.4.3 No Action Alternative

In order for NV Energy to maintain compliance with PUCN directives to supply adequate power to their customers without increasing their dependence on purchased power, they must increase their generating capacity (see **Sections 1.2 and 1.3**, Purpose and Need). At the same time, they have been charged with increasing their system-wide ratio of renewable power sources to fossil fuel sources.

The No Action Alternative describes what could occur if the ON Line Project is not developed. Essentially, NV Energy would continue to be obligated to supply power to their customers, depending on load demands. They would have limited ability to shift power from northern Nevada to demand areas in southern Nevada, and no ability to bring potential renewable energy resources from east central or southeastern Nevada to the market. In the absence of renewable energy sources, traditional sources of generation may be needed, contributing to GHG emissions. NV Energy would be challenged to achieve the mandated higher percentage of renewable energy in the state's portfolio by 2025.

The Proposed Action does not specifically include construction of renewable, low GHG emission energy generating plants, but construction of the proposed transmission line facilities would provide the infrastructure to distribute energy from renewable resource plants in the area. Without the Proposed Action the beneficial impacts of increasing the likelihood of renewable energy development would not occur, and emission offsets to traditional power generating sources would be further delayed. It is also noted that NV Energy has issued a request for proposals to develop renewable energy that can be affordably delivered to the Nevada market.

4.6.4.4 Mitigation

Impacts from this project would be more beneficial overall in the context of increasing the potential to reduce GHG emissions (by facilitating renewable energy), and thus lessen the impact of climate change. Furthermore, the proposed transmission line would support ongoing efforts to meet the requirements of the Nevada Renewable Portfolio Standard. No additional mitigation measures would be required by BLM.

4.7 Vegetation, Including Noxious and Non-Native, Invasive Weeds and Special Status Plants

Both permanent and temporary impacts would occur as a result of the project. Permanent impacts would occur in construction ROWs where project elements would be built, resulting in vegetation loss. Temporary impacts to vegetation would also occur during the construction phase, but they would be short-term and would be reclaimed upon completion of construction.

4.7.1 Indicators and Methods

As described in **Section 1.9.2**, indicators for vegetation resources focus on acreage of vegetative community disturbance. For noxious and non-native, invasive weeds, indicators focus on the acreage of disturbed areas and the proximity of existing noxious and non-native, invasive weeds to the disturbance areas. For special status plants, indicators focus on the acreage of disturbance of species habitat, as well as the potential for individual take of special status species. The following factors were considered in determining an effect on vegetation resources, including communities, noxious and non-native, invasive weeds, and special status plants:

- Magnitude of disturbance or loss
- Biological importance of the resource
- Uniqueness or rarity of the resource
- Federal, state, and/or local protection status of the resource
- Susceptibility of the resource to disturbance

4.7.2 Proposed Action

Direct permanent impacts on vegetation resources would occur due to construction of the transmission line facilities. Temporary impacts would occur during the construction phase due to construction activities, access road usage, plus impacts at other pulling, staging, and temporary use areas located outside the right-of-way on private lands. **Table 4.7-1** shows the estimated acreage of permanent disturbance within the substation footprints and along the transmission line segments of the Proposed Action, by vegetative community.

Permanent impacts (i.e., substation, actual structure location footprints, and access roads within desert tortoise habitat) would likely be long-term but minor, as the vegetative communities present within each of the project elements are common and widespread throughout the area. BMPs would be implemented to control and minimize the spread of noxious and non-native, invasive weeds, and site-specific surveys would be completed for special status plants prior to construction within suitable habitats to avoid direct effects. Indirect effects due to construction would be temporary and minor as many of the disturbed acres would be seeded and reclaimed.

TABLE 4.7-1 LONG-TERM ACREAGE OF IMPACT TO VEGETATIVE COMMUNITIES ASSOCIATED WITH THE PROPOSED ACTION

VEGETATIVE COMMUNITY AND/OR LAND TYPE	PROJECT ELEMENT[1]							
	ROBINSON SUMMIT SUB-STATION *	FALCON SUB-STATION	TRANSMISSION LINE STRUCTURES ONLY (CALCULATIONS INCLUDE 0.1 ACRE DISTURBANCE FOR EACH STRUCTURE, 5 STRUCTURES PER MILE, EXCEPT WITHIN DESERT TORTOISE HABITAT)					
			6C	8	9A	9B	9D	11
Wyoming Sagebrush	102.1	0	21.7	4.1	0	0	0	0
Creosote Bush	0	0	0	0	3	0	78.0	148.0
Pinyon-Juniper	6.1	0	16.5	0	0	0	0	0
Greasewood	0	7.0	7.0	0	0	0	0	0
Douglas Rabbitbrush	0	0	0.6	12.8	0	0	0	0
Joshua Tree	0	0	0	9.7	0	0.5	0	0
Black Sagebrush	3.3	0	7.8	1.1	0	0	0	0
Winterfat	0	0	3.4	0.3	0	0.3	0	0
Burn/Fire-affected	0	0	0	0	0.9	0.7	0	0
Blackbrush	0	0	0	0	3.2	0	0	0
Rubber Rabbitbrush	0	0	0.4	0	0	0	0	0
Desert Playa	0	0	0	0	0	0.9	0	0
Disturbed	0	0	0	0	0	0	0	0
Riparian	0	0	0	0	0	0	0	0
Basin Big Sagebrush	0.1	0	0.2	0	0	0	0	0

[1] Values less than 0.1 acre are not reported.
*includes access road and Falcon-Gonder Loop-in acreage

Construction

Vegetation: Permanent impacts to vegetative communities resulting from construction of the Robinson Summit Substation include 98 acres of Wyoming sagebrush, 6 acres of pinyon-juniper, and 3 acres of black sagebrush. These communities are common and widespread, and typical of higher-elevation areas such as the Robinson Summit Substation location.

Permanent impacts to vegetative communities resulting from construction of the Falcon Substation expansion would include 7 acres of greasewood-dominated vegetation. This community is common and widespread in the Boulder Valley area.

Permanent impacts to vegetative communities resulting from construction of transmission line facilities would occur from the installation of transmission line support structures and associated facilities, including access roads within desert tortoise habitat. Since exact structure locations have not been determined at the time of the FEIS, for analysis purposes it was assumed that structures would be located every 1,050 feet along the proposed corridors, or approximately five structures per mile. In relatively flat areas, a total of 0.1 acre of permanent disturbance per

structure was assumed, except within desert tortoise habitat where 1.0 acre was used. Permanent impacts from structure locations to vegetation communities are slightly underestimated in **Table 4.7-1**, since a total of 1.0 acre of permanent disturbance per structure should be assumed for areas where steeper and/or rough terrain is present.

As indicated in **Table 4.7-1**, vegetative communities most affected by transmission facilities primarily include Wyoming sagebrush, pinyon-juniper, Douglas rabbitbrush, Joshua tree, and creosote bush. Winterfat communities, a sensitive vegetation type, would be impacted in the largest amounts within Segments 6C and 9B. Effects to these overall vegetation communities are considered minor, as they are common and widespread throughout the project area. It should be noted that, while wetland and riparian areas are present within the Proposed Action alignment, these communities would be spanned by transmission line facilities and would not be impacted (see **Section 4.2.2.2**). Permanent impacts are limited to the ground-level structure foundation and anchor areas.

Indirect effects and short-term impacts as a result of construction of the transmission line facilities would be associated with temporary construction areas for new structure locations, access roads to the ROW and within the ROW (outside desert tortoise habitat) to be used during the construction phase, wire stringing sites, and other temporary use areas located inside and outside the ROW, including some areas to be situated on private lands. The effects would occur in the same vegetative communities as the direct effects. Existing roads would be employed to a great extent, and improved where necessary to allow for safe passage of equipment and vehicles. Wire stringing sites would occur on or near the centerline within the ROW, and would be reclaimed after construction is complete. Newly constructed access roads inside and outside the ROW (outside of desert tortoise habitat), along with other staging and temporary use areas located outside the transmission line ROW, would be reclaimed or returned to a pre-construction condition after construction is complete. Prompt reclamation should minimize potential impacts of increased or unauthorized OHV activity.

Special Status Plants: Special status plants have the potential to occur in selected locations within the project area, particularly in Lincoln and Clark counties. White River catseye and Tiehm's blazing star, BLM sensitive plants, were observed at select locations within the transmission line alignment. However, pre-construction surveys and selective structure placement design would allow for avoidance and/or minimization of impacts to significant special status plant communities, thereby rendering impacts to these special status plants negligible. Additional details for mitigation are provided in **Section 4.7.2.2**.

Known Las Vegas buckwheat populations, a candidate species for listing as threatened or endangered, are located within close proximity (approximately 3,150 feet from the eastern edge of the Proposed Action ROW alignment) to Segment 11. No construction activities or disturbance (including access roads) would occur east of the SWIP Utility Corridor and, as a result, there would be no direct impacts to Las Vegas buckwheat populations. Indirect impacts could occur as a result of increased OHV activity and the spread of noxious and non-native, invasive weeds. Indirect impacts as a result of increased OHV activity are expected to be negligible, as there are already existing designated roads in closer proximity to these plant locations. As described in **Section 4.7.2.1** and **Table 4.7-2**, there is a moderate risk that project activities would result in some areas becoming infested with noxious and non-native, invasive weed species and that control measures are essential to prevent the spread of these species. Control measures would include prompt reclamation and revegetation of the access roads (and other construction disturbance) following construction, as well as the development of a noxious and non-native, invasive weed management plan following construction (See **Section 4.7.2.1**).

These control measures and other BMPs in place are expected to reduce the impacts of noxious and non-native, invasive weeds to negligible.

Operations, Maintenance, and Abandonment

Operation and maintenance activities for the Proposed Action would cause long-term negligible to minor impacts to vegetation resources as a result of temporary access for repairs. Vegetation management would require the selective removal of some trees within the long-term ROW. This activity may require occasional mechanical thinning within the ROW, temporarily disturbing surface communities.

Noxious and Non-Native, Invasive Weeds: Noxious and non-native, invasive weeds are known to occur and/or were observed throughout the area of analysis during baseline surveys (**Section 3.7.3.2**). Noxious and non-native, invasive weeds such as whitetop, various thistle and knapweed species, and salt cedar could be affected by the Proposed Action. The spread of these species through new disturbance areas and new dispersal corridors is of significant concern; however, an active management plan as a result of the project could prove to be beneficial in controlling, and even reducing, noxious and non-native, invasive weed communities in the area. A BLM Risk Assessment for Noxious and Non-Native, Invasive Weeds (form/method provided by Bonnie Million, former Weeds Coordinator, Ely District BLM) was completed for the Proposed Action and is provided in **Table 4.7-2**. Factor 1 assesses the likelihood of noxious and non-native, invasive weeds species spreading to the project area, while Factor 2 assesses the consequences of noxious and non-native, invasive weed establishment in the project area. The Risk Rating is the result of multiplying Factors 1 and 2. **Table 4.7-3** provides a general description of the scoring categories, while a detailed explanation of Proposed Action project element-specific scoring is provided below.

TABLE 4.7-2 NOXIOUS AND NON-NATIVE, INVASIVE WEEDS RISK ASSESSMENT FOR THE PROPOSED ACTION

PROJECT ELEMENT	NOXIOUS AND NON-NATIVE, INVASIVE WEED RISK[1]			
	FACTOR 1	FACTOR 2	RISK RATING	RISK DEGREE CATEGORY
Robinson Summit Substation	4	4	16	Moderate
Segment 6C	1	3	3	Low
Segment 8	1	3	3	Low
Segment 9A	1	1	1	Low
Segment 9A	1	1	1	Low
Segment 9A	2	1	2	Low
Segment 11	5	3	15	Moderate

[1] From BLM Ely District Risk Assessment for Noxious and Non-Native, Invasive Weeds protocol

TABLE 4.7-3 NOXIOUS AND NON-NATIVE, INVASIVE WEEDS RISK ASSESSMENT SCORING[1]

FACTOR 1		FACTOR 2		RISK DEGREE CATEGORY	
None (0)	Noxious and non-native, invasive weed species are not located within or adjacent to the project area. Project activity is not likely to result in the establishment of noxious and non-native, invasive weed species in the project area.	Low to Nonexistent (1-3)	None. No cumulative effects expected.	None (0)	Proceed as planned.
Low (1-3)	Noxious and non-native, invasive weed species are present in the areas adjacent to, but not within, the project area. Project activities can be implemented and prevent the spread of noxious and non-native, invasive weeds into the project area.	Moderate (4-7)	Possible adverse effects on site and possible expansion of infestation within the project area. Cumulative effects on native plant communities are likely but limited.	Low (1-10)	Proceed as planned. Initiate control treatment on noxious and non-native, invasive weed populations that get established in the area.
Moderate (4-7)	Noxious and non-native, invasive weeds species located immediately adjacent to or within the project area. Project activities area likely to result in some areas becoming infested with noxious and non-native, invasive weed species even when preventative management actions are followed. Control measures are essential to prevent the spread of noxious and non-native, invasive weeds within the project area.	High (7-10)	Obvious adverse effects within the project area and probable expansion of noxious and non-native, invasive weed infestations to areas outside the project area. Adverse cumulative effects on native plant communities are probable.	Moderate (11-49)	Develop preventative management measures for the proposed project to reduce the risk of introduction of spread of noxious and non-native, invasive weeds into the area. Preventative management measures should include modifying the project to include seeding the area to occupy disturbed sites with desirable species. Monitor the area for at least 3 consecutive years and provide for control of newly established populations of noxious and non-native, invasive weeds and follow-up treatment for previously treated infestations.
High (7-10)	Heavy infestations of noxious and non-native, invasive weeds are located within or immediately adjacent to the project area. Project activities, even with preventative management actions, are likely to result in the establishment and spread of noxious and non-native, invasive weeds on disturbed sites throughout much of the project area.			High (50-100)	Project must be modified to reduce risk level through preventative management measures, including seeding with desirable species to occupy disturbed site and controlling existing infestations of noxious and non-native, invasive weeds prior to project activity. Project must provide at least 5 consecutive years of monitoring. Projects must also provide for control of newly established populations of noxious and non-native, invasive weeds and follow-up treatment for previously treated infestations.

[1] From BLM Ely District Risk Assessment for Noxious and Non-Native, Invasive Weeds protocol

Factor 1 Scores

The presence and relative location of existing noxious and non-native, invasive weed individuals and communities were the most significant influences on Factor 1 scores. Other considerations included the type(s) and density of noxious and non-native, invasive weeds species present, their ability to infest an area, and their manner of dispersal.

Where noxious and non-native, invasive weeds were not present within the study area, but were located in areas adjacent to it, a Factor 1 score of 1 to 3 was attributed to that project element, based on the number of noxious and non-native, invasive weed species present, as well as their relative proximity to the element. A score of 1 was attributed to Segments 6C, 8, 9A, and 9B of the transmission line alignment. Individuals, or small populations, of noxious and non-native, invasive weeds were observed near, but not immediately adjacent to, these elements. A score of 2 was attributed to Segment 9D. No project elements were attributed a Factor 1 score of 3.

Where noxious and non-native, invasive weeds were present either within the project area or immediately adjacent to it, a Factor 1 score between 4 and 7 was attributed to that project element. A score of 4 was attributed to the Robinson Summit Substation. Small populations of noxious and non-native, invasive species are present within this element, although only to a limited extent.

A score of 5 was attributed to Segment 11, where Sahara mustard and whitetop were observed along US-93, immediately adjacent to the proposed transmission line alignment. No project elements were attributed Factor 1 scores greater than 5.

Factor 2 Scores

Factor 2 scores were primarily influenced by the relative consequence of new and/or expanded infestations of noxious and non-native, invasive weeds within each project element, including cumulative effects on native communities. Native plant communities throughout the Proposed Action area are common and widely spread throughout the region, therefore significant cumulative effects are unlikely. A Noxious and Non-Native, Invasive Weed Management Plan would be developed for the agency-preferred alternative; however, common BMPs and mitigation measures associated with noxious and non-native, invasive weeds were considered for the Factor 2 scores for each project element.

Where little to no effects would be caused by noxious and non-native, invasive weed infestations, a Factor 2 score of 1 to 3 was attributed. Scores of 1 or 2 were attributed to Segments 9A, 9B, and 9D. While there exists the potential for introduction of new noxious and non-native, invasive weed populations in these segments, the project areas are relative small and permanent disturbance is limited to the structure locations within the transmission line alignment. BMPs would serve to manage the introduction or spread of new individuals during construction and long-term maintenance, and native plant communities within these segments are common and widespread throughout the region. A score of 3 was attributed to Segments 6C, 8, and 11. The conditions in these transmission line segments are the same as above; however, the segments are significantly longer, and therefore the consequences of a new introduction are slightly higher.

Moderate adverse effects on site, as well as possible expansion of infestations, were attributed Factor 2 scores of 4 to 7. The Robinson Summit Substation was attributed a score of 4, due to the nature of construction (site development, clearing and grading) and the likelihood of new infestation as a result. An active management plan for the project would limit the adverse effects and spreads of noxious and non-native, invasive weeds on and adjacent to the project. The

footprint for the substations is relatively small; therefore the lower mid-range score was used. No Factor 2 scores greater than 4 were attributed to any of the Proposed Action components.

Risk Rating and Risk Degree Category

The risk rating is calculated by multiplying the Factor 1 and Factor 2 scores, and the degree categories range from None to High (**Table 4.7-4**). Segments 6C, 8, 9A, 9B, and 9D all received Risk Ratings between 2 and 10 and Risk Categories of Low, therefore impacts from noxious and non-native, invasive weeds would be minimal. The Robinson Summit Substation and Segment 11 received a Risk Rating between 14 and 36 and a Risk Category of Moderate; therefore impacts from noxious and non-native, invasive weeds would be moderate.

4.7.2.1 Mitigation

1. Safely store salvageable cacti and yucca in temporary plant storage sites; plant salvage from areas of permanent disturbance will be moved once, and replanted during revegetation/reclamation activities.
2. Site-specific and targeted special status plant surveys will be conducted during the appropriately timed survey window, prior to final siting of transmission line structures and temporary use areas. If communities of special status plant species are present at a given structure location or temporary use area, all efforts to relocate that structure or temporary use area will be made to avoid such plants to the extent practicable. If relocating a specific structure or temporary use area is not feasible due to operational constraints and requirements, the individuals and/or community of special status plants to be impacted will be transplanted to an approved location through appropriate and close coordination with the BLM.
3. Locate temporary use areas at least 0.5 mile away from winterfat dominated sites whenever reasonable. Where reasonable, locate temporary access roads outside winterfat dominated sites.
4. In portions of the project area adjacent to populations of Las Vegas buckwheat, new long-term disturbance would consist only of the centerline access road and ground-level structure foundation and anchor areas. All other disturbance (e.g., wire stringing sites and other staging and temporary use areas) would be limited to within the existing SWIP Utility Corridor.

4.7.2.2 Unavoidable Adverse Impacts on Vegetation Resources

There would be unavoidable adverse impacts to vegetation due to permanent disturbance of existing vegetation communities within specific footprints of proposed project elements (i.e., substation equipment and access road and structure foundations and anchor areas). However, there are no known biologically unique, rare, or protected communities proposed for permanent disturbance. As noxious and non-native, invasive weeds are present on or adjacent to the Proposed Action and are known to spread as a result of disturbance, it is likely that there would be some minor impacts due to the spread of these species.

4.7.2.3 Irreversible and Irretrievable Commitments of Resources

There are some vegetative resources that could be reclaimed at the end of the service life of the Proposed Action. However, portions of some vegetative communities would be irreversibly committed due to permanent facilities that would remain even after future abandonment. There are no unique or rare vegetative resources that would be committed as part of the project.

4.7.2.4 Relationship of Short-term Uses and Long-term Productivity

Short-term impacts to vegetation resources within the Proposed Action area are most directly related to wildlife habitat and range resources, and are more accurately addressed in those respective sections. Long-term effects of vegetation resources would be similar in relation to wildlife and range.

4.7.3 Action Alternative

Direct permanent impacts on vegetation resources would occur because of construction of substations and transmission line structures. As with the Proposed Action, additional temporary impacts would occur during the construction phase due to access road usage and other construction-related activities.

Construction

Vegetation: Impacts to vegetative communities from the Robinson Summit Substation and the Falcon Substation expansion would be the same as for the Proposed Action. If selected, permanent impacts to vegetative communities resulting from the RSS-Site B sub-alternative would include approximately 78 acres of a generally mixed black sagebrush and Wyoming sagebrush vegetation community, and less than one acre of pinyon-juniper and winterfat vegetation communities. This includes the disturbances for the structures for the Falcon-Gonder loop-ins, plus the new access road and the existing access road improvements associated with the RSS-Site B sub-alternative.

Permanent impacts to vegetative communities resulting from construction of the Action Alternative are presented in **Table 4.7-4** and were calculated in the same manner as discussed in **Section 4.7.2**.

Indirect effects of the transmission line facilities for the Action Alternative would be the same as described for the Proposed Action. The effects would occur in the same vegetative communities as the direct effects. Existing roads would be utilized to a great extent, and improved where necessary to allow safe passage of equipment and vehicles. Wire-stringing sites would occur on or near the centerline, and would be reclaimed after construction is complete. Newly constructed access roads inside and outside the ROW (outside desert tortoise habitat), along with other staging and temporary use areas located outside the transmission line ROW would be reclaimed or returned to a pre-construction condition after construction is complete.

Special Status Plants: The Action Alternative would pass approximately 1,600 feet closer to known populations of Las Vegas buckwheat than the Proposed Action, but would still be situated within the authorized SWIP Utility Corridor. As with the Proposed Action, there would be no disturbance outside the 200-foot ROW to the extent necessary but all within the SWIP Utility Corridor and, as a result, no direct impacts. The control measures, BMPs, and mitigation would be the same as for the Proposed Action; however, the possibility for indirect impacts from the introduction of noxious and non-native, invasive weeds is increased due to the increased proximity of new disturbance. As a result, it is expected that impacts could range from negligible to minor. Impacts to other special status plants would be the same as for the Proposed Action.

TABLE 4.7-4 LONG-TERM ACREAGE OF IMPACT TO VEGETATIVE COMMUNITIES ASSOCIATED WITH THE ACTION ALTERNATIVE

VEGETATIVE COMMUNITY AND/OR LAND TYPE	PROJECT ELEMENT[1]								
	RSS-SITE B SUB-ALT*	TRANSMISSION LINE STRUCTURES ONLY (CALCULATIONS INCLUDE 0.1 ACRE DISTURBANCE FOR EACH STRUCTURE, 5 STRUCTURES PER MILE, EXCEPT WITHIN DESERT TORTOISE HABITAT)							
		6C	8	9A SUB-ALT	9B	9C	9D	10 SUB-ALT	11
Wyoming Sagebrush	24.9	21.5	4.5	0	0	0	0	0	0
Creosote Bush	0	0	0	3	0	1.7	78	95	152
Pinyon-Juniper	0.5	17.8	0	0	0	0	0	3.7	0
Greasewood	0	6.9	0	0	0	0	0	0	0
Douglas Rabbitbrush	0	0	11.7	0	0	0.1	0	0	0
Joshua Tree	0	0	9.8	0	0.4	0	0	24	0
Black Sagebrush	53.3	2.1	2.0	0	0	1.2	0	0	0
Winterfat	0.4	3.1	0.2	0	2.6	0.2	0	0	0
Burn/Fire-affected	0	0	0	0.8	0	0	0	6.7	0
Blackbrush	0	0	0	3.3	1.9	0	0	0	0
Salt Desert Shrub	0	0	0	0	0	0	0	0.6	0
Desert Playa	0	0	0	0	0.4	0	0	0	●
Riparian	0	0.1	0	0	0	0	0	0	0
Basin Big Sagebrush	0	0.2	0	0	0	0	0	0	0

[1] Values less than 0.1 acre are not reported.
*Includes RSS-Site B Falcon-Gonder Loop-ins and associated access roads

Operations, Maintenance, and Abandonment

Long-term periodic maintenance to the transmission line facilities under the Action Alternative would be the same as described for the Proposed Action and may require access to the corridors via existing roads and may result in temporary disturbance; however, this effect would be minor to negligible.

Noxious and Non-Native, Invasive Weeds: As with the Proposed Action, noxious and non-native, invasive weeds were observed throughout the Action Alternative, (including sub-alternative segments and the RSS-Site B sub-alternative) project element areas. As for the Proposed Action (**Section 4.7.2**), a BLM Risk Assessment for Noxious and Non-Native, Invasive Weeds was completed for the Action Alternative project elements and is provided in **Table 4.7-5**. **Table 4.7-3** provides a general description of the scoring categories. Scores, risk ratings, and risk degree categories are the same as the Proposed Action for the Robinson Summit Substation, Falcon Substation expansion, Segments 6C, 8, 9A, 9B, 9D, and 11, and are

discussed in **Section 4.7.2**. Action Alternative Segments 9C and 10 (sub-alternative), and the RSS-Site B sub-alternative are discussed below.

TABLE 4.7-5 NOXIOUS AND NON-NATIVE, INVASIVE WEEDS RISK ASSESSMENT FOR THE ACTION ALTERNATIVE

PROJECT ELEMENT	NOXIOUS AND NON-NATIVE, INVASIVE WEED RISK[1]			
	FACTOR 1	FACTOR 2	TOTAL	DEGREE CATEGORY
Robinson Summit Substation	Same as Proposed Action			
Segment 6C	Same as Proposed Action			
Segment 8				
Segment 9A Sub-Alt				
Segment 9B				
Segment 9C	1	1	1	Low
Segment 9D	Same as Proposed Action			
Segment 10 Sub-Alt	2	5	10	Low
Segment 11	Same as Proposed Action			
RSS-Site B Sub-Alternative	3	4	12	Moderate

[1] From BLM Risk Assessment for Noxious and Non-Native, Invasive Weeds protocol

Factor 1 Scores

A score of 1 was attributed to Segment 9C. Individuals, or small populations, of noxious and non-native, invasive weeds were observed near, but not immediately adjacent to, this segment. A score of 2 was attributed to sub-alternative Segment 10. Noxious and non-native invasive weeds were observed within or adjacent to the RSS-Site B sub-alternative (including access roads and loop-ins); it was attributed a Factor 1 score of 3.

Factor 2 Scores

A score of 1 was attributed to Segment 9C. While there exists the potential for introduction of new noxious and non-native, invasive weed populations in this segment, the project area is relatively small and permanent disturbance is limited to the structure locations within the transmission line alignment. BMPs would serve to manage the introduction or spread of new individuals during construction and long-term maintenance, and native plant communities within these segments are common and widespread throughout the region. Segment 10 sub-alternative was given a score of 5. The proximity of existing noxious and non-native, invasive weeds to the two transmission line segments indicates a possibility of expansion to the segments; however, disturbance would be limited to structure locations, therefore BMPs should limit this potential. A score of 4 was attributed to the RSS-Site B sub-alternative as there is potential for expansion of noxious and non-native, invasive weed species into disturbed areas surrounding the substation alternative, along the Falcon-Gonder Loop-in and new access road.

Risk Rating and Risk Degree Category

The risk rating is calculated by multiplying the Factor 1 and Factor 2 scores, and the degree categories range from None to High (**Table 4.7-3**). Segments 9C and 10 received Risk Ratings of 1 and 10, respectively and a Risk Category of Low, therefore impacts from noxious and non-native, invasive weeds would be minimal. The RSS-Site B sub-alternative received a Risk Rating of 12 and a Risk Category of Moderate. An active management plan for the project

would limit the adverse effects and spread of noxious and non-native, invasive weeds on and adjacent to the project. Risk Ratings and Risk Categories for all other elements of the Action Alternative were the same as for the Proposed Action.

4.7.3.1 Mitigation

Mitigation measures for the Action Alternative are the same as for the Proposed Action (see **Section 4.7.2.1**), with the exception of the following:

- If the RSS-Site B sub-alternative location is selected, NV Energy will close off and reclaim an existing two-track road that currently is situated within a large winterfat vegetation community to the north of the proposed new access road for the RSS-Site B sub-alternative location. This mitigation will help reduce future impacts to this winterfat vegetation community and allow this area to naturally restore itself.

4.7.3.2 Unavoidable Adverse Impacts on Vegetation Resources

Unavoidable adverse impacts would be the same as the Proposed Action (**Section 4.7.2.2**).

4.7.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources would be similar in scale and degree as to the Proposed Action (**Section 4.7.2.3**).

4.7.3.4 Relationship of Short-term Uses and Long-term Productivity

Short-term uses and long-term productivity would be similar in scale and degree as to the Proposed Action (**Section 4.7.2.4**).

4.7.4 No Action Alternative

Under the No Action alternative, vegetative communities would continue to function in their current capacity. Noxious and non-native, invasive weeds would continue to be managed in their current capacity and would likely continue to spread nominally through continued normal activities and practices. Special status plants would not be affected.

4.8 Wildlife Resources, Including Special Status Wildlife, Migratory Birds, Fisheries, and Aquatic Species

4.8.1 Indicators and Methods

The construction and operation of the project may directly or indirectly impact wildlife through direct disturbance or habitat fragmentation. This may impact game species and wildlife populations and indirectly affect hunting, fishing, and wildlife watching activities.

In response to these and other issues identified during scoping, the following indicators were considered when analyzing potential impacts to wildlife resources and special status species:

- Acres of different wildlife habitats (vegetation community types) physically disturbed and the juxtaposition of that disturbed habitat over the life of the project
- Acres of disturbance to, and the proximity of the proposed operations to, high value habitats such as: crucial and or high value big game ranges, wetlands, and seep and spring areas
- Acres of game species habitat and watchable wildlife disturbed by the project

4.8.2 Proposed Action

The following categories of wildlife inhabit and/or forage within the majority of the project area. Impacts to these species would be similar for all of the project features regardless of the specific element or transmission line segment. Unless otherwise noted, they will not be discussed under each specific project feature.

Bats: Most of the bat species present in the Ely District are sensitive species. Bat roosting areas could be present within some of the transmission line segments. Construction activities (especially blasting for transmission structure footings) in these areas could disturb bats. These impacts would be temporary and negligible. Bats likely use most of the project area for foraging opportunities. Construction activities could cause bats to temporarily abandon foraging within active work zones. No long-term adverse effects to bats are expected to occur from the operations, maintenance, or abandonment of any of the Proposed Action elements.

Migratory Birds: Several sensitive and numerous common avian species utilize the project area for foraging and nesting. Construction activities would affect avian species that currently forage or nest in these areas causing these species to displace to adjacent undisturbed areas. Mitigation measures (**Section 4.8.2.1**) would be employed prior to and during construction activities that would greatly reduce the likelihood of avian species nesting behavior being directly impacted or disrupted and/or nests being destroyed.

Small Mammals, Predatory Mammals, and Reptiles: Common small mammals (i.e., black-tailed jackrabbits and ground squirrels), common predators (i.e., kit fox, coyote, and badger), and common reptile species (i.e., sagebrush and fence lizards) that are known to occur throughout the project area would be displaced into adjacent undisturbed lands during construction activities. However, some small and less mobile wildlife species would be killed or injured during these construction activities.

Direct permanent impacts to wildlife habitat would occur due to construction of the substations and transmission line facilities. Additionally, temporary impacts would occur during the construction phase due to access road usage and other temporary construction-related activities inside and outside the transmission line ROW. **Table 4.7-1** shows the approximate acres of long-term disturbance impacts of the Proposed Action, by vegetative community/wildlife habitat. Where temporary impacts occur, those areas would be reclaimed after construction is complete. Permanent impacts would not be reclaimed and these impacts would likely be long-term but minor, as the vegetative communities/wildlife habitat present within each of the project elements are common and widespread throughout the area. Wetland impacts would be avoided in all Proposed Action elements (wetlands are discussed in additional detail in **Section 4.2**).

Construction

The Proposed Action transmission line facilities would pass over a wide range of vegetation communities as described in **Section 3.7**. The most common vegetation communities are dominated by Wyoming sagebrush, creosote bush, pinyon-juniper, Joshua tree, and Douglas rabbitbrush. Together, these communities make up a large majority of the project area.

Permanent disturbance to habitat would occur at each transmission structure location, as well as the Robinson Summit Substation and the Falcon Substation expansion area. Long-term acreage impacts to the various vegetation communities/wildlife habitats within the project area for the Proposed Action are described in **Section 4.7**. Soils and vegetation would be removed from or compacted in these areas, essentially eliminating forage production for the duration of disturbance. More sensitive wetland and riparian areas are present within various portions of the

Proposed Action area as described in **Section 4.2** and **4.7**, but these habitats would be spanned by transmission line facilities and would not be impacted under the Proposed Action. Therefore, impacts to aquatic species or fisheries within the project area are not anticipated during construction of the transmission line facilities.

Most of the wildlife species that inhabit the Proposed Action area are highly mobile and would likely vacate the construction area and alter movement patterns as construction personnel progress with construction activities. Species that are slow-moving or tend to retreat underground when approached could be directly affected by construction equipment and excavations for structure and substation equipment foundations. Excavations for foundations would be made with vehicle-mounted augers, backhoes, and other power equipment. In rocky areas, drilling and blasting may be necessary. The increased human activity and noise associated with construction activities would likely cause wildlife to temporarily avoid the area and displace into adjacent, undisturbed suitable habitat causing increased competition for resources. Approximately 500 workers, over a 24-month period, spread out along various portions of the ROW, would be necessary to complete the construction of the ON Line Project. Increased traffic associated with construction activities has the potential to cause an increase in wildlife-vehicle collisions.

Threatened, Endangered, Proposed, and Candidate (TEPC) Species

Desert Tortoise: Tortoise habitat is known to occur in Segment 9D, Segment 11, and southern portions of Segment 9A. Approximately 434 acres of desert tortoise habitat, of which 238 acres is desert tortoise critical habitat, would be permanently disturbed under the Proposed Action by the construction of transmission facilities in Segments 9A, 9D, and Segment 11.

In order to avoid any direct effects to individual tortoises, all BMPs and federal threatened species protocols specific to desert tortoises would be employed prior to and during the construction of the transmission line facilities. A Request to Append an action to current Biological Opinions (BOs) is being prepared by BLM, in place of a Biological Assessment, and will be submitted to the USFWS. The Request to Append document for this project analyzes the potential impacts to the desert tortoise within the project area. Following the USFWS review and approval of the Request to Append an action to the existing BOs, all applicable mitigation measures and Terms and Conditions of existing BOs would need to be implemented and followed, which would become part of the Final COM Plan.

Greater sage-grouse: **Figure 3.8-1** illustrates the location of leks within 2 miles of the project area and **Table 4.8-1** below shows the proximity of these leks to the nearest transmission line segment. Two active, two inactive, and two unknown-status leks would be in proximity to Segment 6C. Human disturbance associated with construction activities could disturb greater sage-grouse during the breeding season. **Section 4.8.2.1** identifies mitigation measures that would be taken in order to minimize construction phase disturbance to greater sage-grouse. Outside of the breeding season and within suitable greater sage-grouse habitat, greater sage-grouse using the project area would be displaced into adjacent undisturbed habitat and suitable habitat would be impacted. The construction of transmission line facilities would have a negligible to moderate, short-term impact on greater sage-grouse within the construction area and minor, long-term impacts on potentially suitable habitat.

TABLE 4.8-1 GREATER SAGE-GROUSE LEKS PROXIMITY TO THE PROPOSED ACTION

LEK NAME	ACTIVE / NOT ACTIVE/ HISTORIC	APPROXIMATE DISTANCE FROM THE NEAREST TRANSMISSION LINE SEGMENT
Ellison Creek N	Active	0.5 miles from Segment 6C
Ellison Creek N N	Inactive	Within Segment 6C
Runway	Unknown	0.6 miles from Segment 6C
Ellison Creek	Inactive	1.3 miles from Segment 6C
Ellison Knobs	Unknown	2.0 miles from Segment 6C
White River	Active	0.5 miles from Segment 6C

<u>BLM Sensitive and State of Nevada Special Status Species</u>

Pygmy Rabbit: Pygmy rabbits, or their sign, were recorded in Segment 6C. Pygmy rabbits are highly mobile and would likely vacate the construction area and alter movement patterns as construction personnel progress with construction activities. As with other ground-dwelling species, pygmy rabbits could be directly affected by construction activities such as destruction of burrows. The construction of transmission line facilities would have a negligible, short-term impact on pygmy rabbits within the construction area and minor, long-term impacts on potentially suitable habitat.

Raptors (including Bald and Golden Eagles): Many species of raptors utilize the diversity of habitats that exist throughout all of the proposed transmission line segments. Noise and human disturbance associated with the construction of the transmission line facilities would have a temporary impact on foraging raptors and would temporarily displace them to areas outside the active construction zone. Mitigation measures (**Section 4.8.2.1**), such as timing restrictions, active nest buffers, and implementation of an APP, would be employed prior to and during construction activities that would greatly reduce the likelihood of raptor nesting behavior being disrupted or nests being destroyed. The intensity of these impacts would vary according to species, but impacts that are a direct result of construction activities are not expected to exceed a negligible level. The installation of transmission line structures would increase the perching opportunities for raptors throughout the project area.

Western Burrowing Owl: As stated in **Section 3.8.4.2**, burrowing owl nests have not been observed within Proposed Action elements. If burrowing owls are present, construction activities would have temporary, negligible impacts to burrowing owls by discouraging them from foraging or nesting within the active construction zone and by displacing them to adjacent areas with suitable foraging and nesting habitat. In order to avoid direct impacts to burrowing owls, mitigation measures (**Section 4.8.2.1**) would be employed prior to and during construction activities that would greatly reduce the likelihood of burrowing owl nests being destroyed.

Banded Gila Monster: Potential banded Gila monster habitat exists within the vicinity of the southernmost portions of the transmission line facilities in Lincoln and Clark counties. Its geographic range approximates that of the desert tortoise. Please refer to **Section 4.8.2.1** for specific mitigation measures regarding the banded Gila monster.

Kangaroo Mouse: Kangaroo mice have been documented in Dry Lake Valley which is traversed by Segment 8. Kangaroo mice could be directly affected by construction activities through destruction of burrows and habitat. The construction of the transmission line facilities would have a minor, short-term impact on kangaroo mice within the construction area and minor, long-term impacts on potentially suitable habitat.

Montane Vole: This species has been documented in Pahranagat Valley (Linzey and Hammerson 2008) which is west of the proposed ON Line project. Montane voles could be directly affected by construction activities through destruction of burrows and habitat. However, the montane vole is localized to wetland/riparian areas which would be spanned by the project. The construction of the transmission line facilities would have a negligible, short-term impact on montane voles within the construction area and negligible, long-term impacts on potentially suitable habitat.

Desert Bighorn Sheep: Potential desert bighorn sheep habitat is present in several areas along Segment 6C. Occupied desert bighorn sheep habitat is present at the very south end of Segment 6C, all along Segment 9A, and the south end of Segment 11 (**Figure 3.8-4d**). Potential impacts are discussed under Bighorn Sheep in General Wildlife below.

General Wildlife

Pronghorn Antelope: With the exception of some higher elevation areas, pronghorn year-round range exists within all transmission line segments that are north of Segment 9A. No pronghorn crucial winter range exists within the project area. Noise and increased human activity would likely cause pronghorn to be displaced to neighboring areas with suitable habitat during construction of the transmission line facilities. Impacts to pronghorn resulting from construction activities would be temporary and negligible to minor.

Mule Deer: Several transmission line segments pass through small portions of mule deer crucial winter range (**Figure 3.8-4b**). **Table 4.8-2** below indicates which transmission line segments are within and/or adjacent to mule deer crucial winter range. Noise and increased human activity in these areas and other suitable mule deer range would likely cause mule deer to be displaced to neighboring areas with suitable habitat during construction of the transmission line facilities. Construction activities during winter months that occur adjacent to crucial winter range could displace some mule deer to higher elevations, thus increasing population density within this winter range. Where appropriate, construction activities within crucial mule deer winter range would be restricted between November and March. Therefore, impacts to mule deer resulting from construction activities would be temporary and minor.

TABLE 4.8-2 MULE DEER CRUCIAL WINTER RANGE PROXIMITY TO THE PROPOSED ACTION

TRANSMISSION LINE SEGMENT	PROXIMITY TO TRANSMISSION LINE SEGMENT
Segment 6C	Adjacent to crucial winter range where Segment 6C intersects Highway 6
Segment 6C	Portions within crucial winter range near Wells Station in the Grant range
Segment 6C	Adjacent to crucial winter range near the northern toe of the Golden Gate Range
Segment 6C	Portions within crucial winter range of Silver King Pass on the Schell Creek Range
Segment 8	Portions within crucial range surrounding the Bristol Wells area.
Segment 8	Adjacent to crucial range along the western slope of the Highland range

Elk: There is no elk crucial winter range or crucial summer range within the project area. Segments of the transmission line facilities that are situated in mid to upper elevations pass through elk year-round habitat. **Table 3.8-6** and **Figure 3.8-4c** detail these areas. Elk sign was numerous in the vicinity of the Robinson Summit Substation and the Silver King Pass portion of Segment 6C. Noise and increased human activity would likely cause elk to be displaced to neighboring areas with suitable habitat during construction of the transmission line facilities

and/or the Robinson Summit Substation. Impacts to elk resulting from construction activities would be temporary and would not be expected to exceed a negligible level.

Bighorn Sheep: No occupied Rocky Mountain bighorn sheep range is located near any of the Proposed Action components. Several transmission line segments pass through occupied and potential desert bighorn sheep range (**Figure 3.8-4d**), a BLM Sensitive species. **Table 4.8-3** below indicates which transmission line segments are within and/or adjacent to occupied desert bighorn sheep range.

Within Clark County and where appropriate outside of Clark County, surface activity within occupied desert bighorn sheep habitat would be restricted from March 1 through May 31 and from July 1 through August 31. Noise and increased human activity would likely cause bighorn sheep to be displaced to neighboring areas with suitable habitat during the construction of transmission line facilities. Impacts to bighorn sheep resulting from construction activities would be temporary and minor.

TABLE 4.8-3 OCCUPIED DESERT BIGHORN RANGE PROXIMITY TO THE PROPOSED ACTION

TRANSMISSION LINE SEGMENT	PROXIMITY TO TRANSMISSION LINE SEGMENT
Segment 6C	Portions within occupied range surrounding Silver King Pass of the Schell Creek Range
Segment 9A	Within occupied range
Segment 11	Portions within occupied range of the Arrow Canyon Range

Waterfowl: Two key waterfowl areas have been identified within the project area. Segment 6C passes just south of the southern portion of the Kirch Wildlife Management Area and the northern portion of Segment 9D passes less than a thousand feet from the Pahranagat National Wildlife Refuge. Noise and increased human activity associated with the construction of the transmission line facilities could have temporary impacts on nesting and foraging activities of waterfowl. The intensity of these impacts would vary according to species, but impacts that are a direct result of construction activities would be temporary and are not expected to exceed a minor level.

Operations, Maintenance, and Abandonment

Wildlife could be periodically disturbed by annual maintenance/inspections and any unplanned repairs that may be required to correct any failures. The substations would be visited regularly to perform routine maintenance. Vegetation would be trimmed as-needed under and along the transmission line facilities to minimize potential interference with the transmission line facilities. Planned operations and maintenance on transmission line facilities would consist of annual line patrol by two linemen by helicopter. Additional unscheduled patrols may be required by ATV, truck, or bucket truck, if issues are encountered. Because of the intermittent nature of maintenance operations, the presence of linemen and their equipment are not anticipated to result in any long-term effects on wildlife.

<u>*Threatened, Endangered, Proposed, and Candidate (TEPC) Species*</u>

Desert Tortoise: Desert tortoises could be affected by personnel and equipment necessary for routine and unscheduled maintenance. Further, desert tortoises could be impacted as a result of increased perching sites available to common ravens. In order to reduce the chance of direct impacts to tortoises, all applicable mitigation measures and Terms and Conditions in pertinent

and existing BOs, to be appended as a result of the USFWS' approval of the Request to Append document, would be applied prior to and during operations, maintenance, or abandonment procedures.

Greater sage-grouse: Power lines can provide hunting perches for raptors in treeless areas. Greater sage-grouse may also be injured or killed by flying into these structures. Power lines most likely impact grouse near leks, in brood-rearing habitat, and in wintering areas that also support large numbers of wintering raptors. Construction of new power lines contributes to habitat degradation when accompanied by new roads or other infrastructure, e.g., pipelines, fences, etc. (Kobriger and McCarthy 2005).

Utilities commonly make power line structures safe for raptors to use as perches, but this poses a dilemma in sage-grouse habitat. It is important that parties involved with power lines utilize appropriate guidelines (Avian Power Line Interaction Committee Guidelines) when designing raptor perch sites and perch guards (Kobriger and McCarthy 2005).

Power lines not only increase habitat fragmentation, but also provide perches for avian predators of sage-grouse (Braun 1998). Although the magnitude of such effects on sage-grouse habitats and populations is unknown, sage-grouse use has been shown to increase as distance from power lines increases (Braun 1998). Disturbance from raptors, particularly golden eagles (*Aquila chrysaetos*), may disrupt strutting males on leks (Rogers 1964, Ellis 1984); thus, structures that provide perches for raptors may increase such disturbance. Studies in California identified three factors associated with power lines that could decrease sage-grouse numbers or lek use, either singly or in combination: 1) raptors, especially immature golden eagles, hunt more efficiently from perches such as transmission line structures and may harass or take adult grouse near or on leks; 2) common ravens (*Corvus corax*) may use the structures as perches and nest sites, and prey on eggs and young of sage-grouse near leks; and 3) sage-grouse may respond to structures as potential raptor perch sites and thus abandon, or decrease their use of, a lek from which structures can be seen (Rowland 2004).

Section 4.8.2.1 identifies specific mitigation measures that would be applicable to transmission line facilities in both occupied and suitable greater sage-grouse habitat. These measures include transmission structure design features that are intended to reduce collisions and help negate greater sage-grouse predation by discouraging raptors from utilizing power lines as hunting facilities.

Greater sage-grouse leks in close proximity to transmission line facilities could be abandoned. The operations, maintenance, and abandonment of transmission facilities would have both short-term and long-term impacts on greater sage-grouse. The magnitude of these impacts could range from negligible to major (i.e., if abandonment of an active lek occurred as a result of the transmission line).

BLM Sensitive and State of Nevada Special Status Species

Pygmy Rabbit: The construction of the transmission line facilities within or near suitable habitat would result in direct sagebrush habitat loss and provide raptor perches that facilitate predation, disrupt pygmy rabbit dispersal corridors, and increase human access for recreational activities, all of which impact pygmy rabbits and their habitat. Power line structures can provide hunting and roosting perches and nesting support for many raptor species that can prey upon pygmy rabbits. Proposed modified structure designs would assist in attempting to minimize hunting and roosting perch opportunities within and near suitable pygmy rabbit habitat. Power lines are often accompanied by maintenance roads that may serve as travel corridors for predators, spread

weeds, and offer access for hunters and recreationists (Haworth 2005). However, the project would utilize mostly existing roads for construction, operations, and maintenance. New access routes along the project ROW for construction would only be a temporary disturbance, and reclaimed as described in previous sections. There would be no new permanent access roads in pygmy rabbit habitat.

The operations, maintenance, and abandonment of transmission facilities would have both transient and long-term impacts on pygmy rabbits. The magnitude of these impacts could range from negligible to minor.

Raptors (including Bald and Golden Eagles): Numerous studies have been conducted and published on the interactions between raptors and transmission lines. Raptor electrocution continues to be one of the major wildlife concerns of state and federal agencies. Collisions with and electrocutions by power lines are common and have been well documented for at least four decades. However, for the ON Line Project high voltage transmission line, the phase-to-phase (i.e., wire to wire) spacing is about 44 feet. The distance from phase to tower spacing is over 13 feet. These separation distances would be over and above the 60-inch spacing requirements specified in the Avian Power Line Interaction Committee (APLIC) guidelines for eagle protection from electrocution. This spacing would make it virtually impossible for an eagle to be electrocuted on this high voltage line.

Transmission lines and structures have been known to have a beneficial effect on raptors as well. Despite design features that are intended to discourage roosting, perching, and nesting, transmission lines have been known to provide areas that facilitate hunting. While these effects are beneficial for raptors, they are adverse to prey species (including sensitive species like greater sage-grouse and pygmy rabbits).

The APLIC published a book entitled *Suggested Practices for Avian Protection on Power Lines: The State of the Art 2006.* Also, the USFWS recently issued guidance that includes monitoring and management of golden eagles (Pagel et al. 2010). These documents would be employed as BMPs with regard to the design, construction, operations, and maintenance of the ON Line project. The implementation of these guidelines should significantly reduce the number of raptors that could potentially collide with or fly into transmission line facilities.

In addition, NV Energy would continue to fully implement and adhere to its existing APP that would include a specific APP for the ON Line Project. This existing plan addresses permit compliance (USFWS and NDOW), construction and modification design standards, and avian mortality reporting and protocols. Concurrence from the USFWS on the specific APP for the ON Line Project would be obtained prior to project implementation and would be included as a condition of the ROW grant.

Therefore, impacts to raptors are expected to be negligible to moderate and long-term.

Western Burrowing Owl: As with all avian wildlife, the introduction of new transmission line facilities increases the likelihood of burrowing owls experiencing in-flight collisions with structures and lines. However, due to their keen eyesight and small stature, impacts to burrowing owls would likely be less severe than those anticipated for larger birds of prey. The presence of transmission line facilities may deter burrowing owls from nesting in previously occupied habitat. The operations, maintenance, and abandonment of transmission line facilities would have both short-term and long-term impacts on burrowing owls. The magnitude of these impacts could range from negligible to moderate.

Kangaroo Mouse: The Proposed Action (Segments 6C, Segment 8, and Segment 9B) would overlap portions of potentially suitable dark kangaroo mouse habitat. The construction of the transmission line facilities within or near suitable habitat would result in direct habitat loss, provide raptor perches that facilitate predation, and increase human access for recreational activities, all of which could impact kangaroo mice and their habitat. Power line structures can provide hunting and roosting perches and nesting support for many raptor species that can prey upon kangaroo mice. Proposed modified structure designs would assist in attempting to minimize hunting and roosting perch opportunities near known kangaroo mouse locations. Access along the project ROW for construction would only be a temporary disturbance and reclaimed as described in previous sections. There would, therefore, not be permanent new access roads in kangaroo mouse habitat.

Montane Vole: The Proposed Action would traverse potential montane vole habitat. However, the montane vole is localized to wetland/riparian areas which would be spanned by the project so there should be no direct habitat loss. Transmission line facilities near suitable habitat would provide raptor perches that could facilitate predation.

Desert Bighorn Sheep: See discussion of Bighorn Sheep under General Wildlife.

General Wildlife

During operations and maintenance of the project, wildlife would return to the project area, impeded only by the intermittent towers where habitat would no longer be available.

Pronghorn Antelope: Due to the vast availability of suitable pronghorn habitat, and the ability of this species to habituate to human-made structures, no long-term impacts to pronghorn are expected to occur due to operations, maintenance, and abandonment of any of the transmission facilities.

Mule Deer: Due to the ability of mule deer to habituate to human-made structures, no long-term impacts to this species are expected to occur due to operations, maintenance, and abandonment of any of the transmission facilities.

Elk: Elk may experience short-term impacts following the construction of the Robinson Summit Substation. Elk would likely alter their current movement and foraging patterns in order to avoid this newly constructed feature. However, due to the ability of elk to habituate to human-made structures, no long-term impacts to this species are expected to occur due to operations, maintenance, and abandonment of the transmission facilities.

Bighorn Sheep: No long-term impacts to either Rocky Mountain Bighorn Sheep or Desert Bighorn Sheep, a BLM Sensitive species, are expected to occur due to operations, maintenance, and abandonment of any of the transmission facilities.

Avian Wildlife: The Avian Power Line Interaction Committee (APLIC) published a book entitled *Suggested Practices for Avian Protection on Power Lines: The State of the Art 2006*. This document would be utilized as a BMP for minimizing adverse impacts to avian wildlife. Engineers have also incorporated design features for transmission line structures that are intended to reduce collisions, electrocutions, roosting, perching, and nesting.

Waterfowl: As noted in **Section 3.8.3.3,** several species of waterfowl inhabit various portions of the transmission facilities. As with all avian wildlife, the introduction of new transmission line facilities increases the likelihood of waterfowl experiencing in-flight collisions with structures and lines. As mentioned above, design features intended to reduce collisions by making

transmission line facilities more visible to waterfowl would be applied in all areas that waterfowl commonly migrate through.

4.8.2.1 Mitigation

Desert tortoise mitigation measures are already included as part of the Proposed Action, see Chapter 2. In addition, all Terms and Conditions of applicable BOs will be implemented and followed.

1. Banded Gila Monster Mitigation Measures

Banded Gila monsters can occur within the southern portion of the project area in southern Lincoln and northern Clark counties. Measures provided by NDOW in a November 1, 2007 publication entitled *Gila Monster Status, Identification and Reporting Protocol for Observations* are to be followed by the Proponent and their private contractors so as to minimize impacts on the Gila monster associated with the ON Line Project:

- Live Gila monsters found in harm's way on the construction site will be captured and then detained in a cool, shaded environment (<85°F) by the project biologist or equivalent personnel until a NDOW biologist can arrive for documentation, marking, and obtaining biological measurements and samples prior to releasing. Despite that a Gila monster is venomous and can deliver a serious bite, its relatively slow gate allows for it to be easily coaxed or lifted into an open bucket or box carefully using a long handled instrument such as a shovel or snake hook (*Note: it is not the intent of NDOW to request unreasonable action to facilitate captures; additional coordination with NDOW will clarify logistical points*). A clean 5-gallon plastic bucket with a secure, vented lid; an 18"x 18"x 4" plastic sweater box with a secure, vented lid; or, a tape-sealed cardboard box of similar dimension may be used for safe containment. Additionally, written information identifying the mapped capture location, Global Positioning System (GPS) coordinates in Universal Transverse Mercator (UTM) using the North American Datum (NAD) 83 Zone 11. Date, time, and circumstances (e.g., biological survey or construction), and habitat description (vegetation, slope, aspect, substrate) would also be provided to NDOW.
- Injuries to Gila monsters may occur during excavation, blasting, road grading, or other construction activities. In the event a Gila monster is injured, it should be transferred to a veterinarian proficient in reptile medicine for evaluation of appropriate treatment. Rehabilitation or euthanasia expenses would not be covered by NDOW. However, NDOW will be immediately notified of any injury to a Gila monster and which veterinarian is providing care for the animal. If an animal is killed or found dead, the carcass will be immediately frozen and transferred to NDOW with a complete written description of the discovery and circumstances, date, time, habitat, and mapped location (GPS coordinates in UTM using NAD 83 Z 11).
- Should NDOW's assistance be delayed, biological or equivalent acting personnel on site will detain the Gila monster out of harm's way until NDOW personnel can respond. The Gila monster should be detained until NDOW biologists have responded. Should NDOW not be immediately available to respond for photo-documentation, a digital (5 megapixle or higher) or 35mm camera would be used to take good quality images of the Gila monster in situ at the location of live encounter or dead salvage. The pictures will be provided to NDOW along with specific location information including GPS coordinates in UTM using NAD 83 Z 11, date, time and habitat description. Pictures would show the following information: (1) Encounter location (landscape with Gila monster in clear view); (2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster

should fill camera's field of view and be in sharp focus); (3) a clear, overhead close-up of the head (head should fill camera's field of view and be in sharp focus).

2. Avian Wildlife Mitigation Measures

For a complete list of protected birds see 50 C.F.R. 10.13.

A. Greater sage-grouse

In order to minimize the possibility of disruption of mating strategies of greater sage-grouse, the Proponent will employ the following:

- No construction activities will occur during the period from March 1 through May 15 within two miles of active greater sage-grouse leks. However, construction traffic can proceed through the area during this period, outside the 0.25 mile no surface occupancy area around leks, except from 2 hours before sunrise until 10:00 am.
- Modified transmission line structure design, including H-frame structures and perch deterrents, will be used in locations within two miles of known active leks and in areas of combined nesting, wintering, and summer brooding habitat. The final placement of modified structures would be determined based on current data and identified in the COM Plan. Within identified winter habitat, site specific surveys may be conducted to confirm winter use and habitat.

B. Migratory Birds

- Land disturbing construction and vegetation clearing activities will be scheduled outside of the breeding season (March 15 through July 30 - in upland desert habitats and ephemeral washes containing upland species and March 1 through August 30 - in riparian and higher elevation areas). Where construction is required during the breeding season, the area impacted will be surveyed for nests prior to construction. If no nests are found, construction could proceed. Project area surveys will be done to ensure 100 percent coverage. Methods will be selected based on the plant community and/or topography. Field notes and reports will thoroughly describe methodology and rationale for use and archived.
- If active migratory bird nests (i.e., contains eggs or young, or a mated pair is observed exhibiting territorial defense, carrying nesting material, and/or transporting food) are encountered during the surveys, land disturbing construction activities will be avoided while the birds are allowed to fledge. An appropriate construction avoidance buffer area, to be determined for the species and in conjunction with the USFWS and BLM, will apply to all active nests for migratory bird species.
- Gaps or narrow open hollow spaces in the proposed facilities or structures capable of trapping cavity-nesting birds will be inspected and closed, if necessary to prevent unintentional take of migratory birds. In addition, open-ended posts will also be inspected and capped and any holes towards the top of a hollow post would be filled, as necessary.

C. Western Burrowing Owls and Ground Nesting Species

- Surveys are to include burrowing owls and other ground nesting species. Surveys would be conducted following the California Burrowing Owl Consortium's survey protocol. If active nests containing eggs and/or young were to be found, then an appropriately-sized buffer area will be established (minimum of 250 feet), marked and avoided during

construction so that egg laying, incubation and the rearing of young continues until such time as the young fledge.

- For construction activities from October 1 to March 14, the wildlife biologist will collapse all burrows, holes, crevices, or other cavities on the construction site only after thoroughly inspecting them for inhabitants, in accordance with agency protocols. This will discourage burrowing owls from potentially occupying the burrows, holes, crevices before and during construction activities. Any burrowing owl burrows collapsed as a result of pre-construction activities will be reconstructed after construction activities are complete.
- If burrowing owls are observed during surveys after March 15, the wildlife biologist will be notified. The wildlife biologist will rely on behavioral observations to determine their breeding status. Should breeding behavior be observed, the wildlife biologist assumes that an active nest is present and the area will be avoided until the young fledge. This ensures that any eggs or young are not abandoned due to project activities. The owl's total nesting cycle takes a minimum of 74 days, during which time construction activity needs to cease within the buffer area on the site. Generally, owl eggs may be laid between mid-March to the end of May, and young may be present from mid-April through August. (Adapted from USFWS recommendations)

D. Raptors

- Raptor nests within the project area will be identified during pre-construction surveys for migratory and ground-nesting birds. All active raptor nests will be avoided. Known raptor nest sites will be checked two to five days prior to construction activities in a given area. If an active raptor nest site is discovered, construction activities will be restricted within 0.5 miles of the active nest site from May 1 through July 15.
- NV Energy will continue to fully implement and adhere to its existing Avian Protection Plan (APP). This existing plan addresses permit compliance (USFWS and NDOW), construction and modification design standards, and avian mortality reporting and protocols. The APP also incorporates guidance from the APLIC and USFWS documents (APLIC 2006; Pagel et al. 2010). A specific APP for the ON Line Project is currently being prepared by NV Energy and will be included as an appendix in the overall APP (NV Energy 2010). Concurrence from the USFWS on the specific APP for the ON Line Project will be obtained prior to project implementation and will be included as a condition of the ROW grant.

<u>3. Pygmy Rabbit</u>

- If pygmy rabbit areas are discovered during pre-construction surveys and natal burrows are found, new disturbance will not occur within 200 feet of the areas, when feasible. If not feasibly, direct disturbance of burrows will be avoided unless the burrow can be determined to be inactive. This determination will be made by a qualified biologist.

<u>4. Kangaroo Mouse</u>

- For areas of proposed surface disturbance, within identified, potentially suitable habitat, and where evidence (i.e., burrows) of small mammals are present for the kangaroo mouse, site-specific trapping to determine the presence/absence and potentially relocate individual kangaroo mice will be conducted in consultation with the BLM biologist.

5. Big Game Mitigation Measures

- Within the BLM Southern Nevada District, construction activities will be restricted within occupied desert bighorn sheep habitat from March 1 through May 31 and from July 1 through August 31.

4.8.2.2 Unavoidable Adverse Impacts on Wildlife Resources

The Proposed Action would permanently impact wildlife habitat within portions of the long-term ROWs for the transmission facilities. **Table 4.7-1** details the potential disturbance impacts to wildlife habitats, as represented by the vegetation communities that would occur under the Proposed Action. This loss of habitat would be small compared to the available undisturbed wildlife habitat within the project area. These habitat losses could be replaced over decades if the ON Line Project operations and maintenance activities ceased and the project elements were removed.

Some long-term unavoidable adverse effects on wildlife populations would potentially occur as a result of mortalities during construction and operation activities.

4.8.2.3 Irreversible and Irretrievable Commitments of Resources

An irreversible commitment of resources occurs if the commitment cannot be changed once made. There are no foreseeable irreversible commitments of wildlife resources associated with the ON Line Project and its facilities.

An irretrievable commitment of resources occurs when resources are used, consumed, destroyed, or degraded during project construction, operation, and maintenance and cannot be reused or recovered for the life of the project or beyond. Both protected and general wildlife species within the project area may be subject to irretrievable commitment of resources with regard to the following types of disturbance: (1) disquieting and excessive noise, (2) increased human disturbance, (3) habitat loss and fragmentation, and (4) increased roads and vehicle traffic, for the life of the ON Line Project or beyond.

4.8.2.4 Relationship of Short-term Uses and Long-term Productivity

Temporary disturbance and loss of habitat used by numerous species of wildlife could be considered a short term use. Most impacts to wildlife resources would initially result from construction activities and be temporary in duration, but some would persist for the operational life of the ON Line Project.

4.8.3 Action Alternative

As stated and described in **Section 4.8.2**, bats, migratory birds, small mammals, predatory mammals, and reptiles also inhabit and/or forage within the majority of the project area for the Action Alternative components. Potential impacts to these species would be of similar types to the Proposed Action for all of the components of the Action Alternative, including sub-alternative segments 9A and 10 and the RSS-Site B sub-alternative.

Construction

Construction of the Action Alternative would have similar impacts to those described under the Proposed Action.

Wyoming sagebrush, creosote bush, pinyon-juniper, greasewood, and Douglas rabbitbrush communities make up the majority of potentially impacted areas for the Action Alternative.

As stated previously, more sensitive wetland and riparian areas are present within various portions of the transmission line facilities as described in **Section 4.2** and **4.7**, but these habitats would be spanned by transmission line facilities and are not anticipated to be impacted. Therefore, impacts to aquatic species or fisheries within the project area are not anticipated from the Action Alternative.

Threatened, Endangered, Proposed, and Candidate (TEPC) Species

Desert Tortoise: Tortoise habitat is known to occur in Segments 9C, the southern portions of sub-alternative Segments 9A and 10, and Segment 11. Approximately 1,311 acres of the ROW for the Action Alternative transmission line facilities would occur within desert tortoise habitat; 938 acres within critical desert tortoise habitat and 373 acres within known desert tortoise outside of critical habitat in Segment 9D (approximately 207 acres) and 11 (approximately 731 acres). Within Segment 10 (sub-alternative), up to 672 acres of the ROW would occur within desert tortoise habitat (372 acres within critical habitat). Within Segment 9A (sub-alternative), up to 26 acres of the ROW would occur within desert tortoise habitat. Permanent impacts within the ROW would result from the actual structure footprints and access roads.

Potential effects to desert tortoise and mitigation measures concerning this species would be identical to those previously discussed in **Section 4.8.2**.

Greater sage-grouse: As described in **Section 4.8.2**, greater sage-grouse habitat occurs in Segments 6C and the northern portion of Segment 8 of the project area. There are leks within or less than 2 miles of the transmission facilities under the Action Alternative. **Figure 3.8-1** illustrates the location of leks and **Table 4.8-4** below shows the proximity of the leks to the nearest transmission line segment. One active, two inactive, and four unknown leks would occur within two miles of the Action Alternative transmission line segments.

As described under the Proposed Action, human disturbance associated with construction activities could disturb greater sage-grouse during the breeding season. In order to minimize or eliminate these disturbances, transmission line construction activity would be restricted as described in **Section 4.8.2.1**. Outside of the breeding season and within suitable greater sage-grouse habitat, greater sage-grouse using the project area would be displaced into adjacent undisturbed habitat and suitable habitat would be impacted.

TABLE 4.8-4 GREATER SAGE-GROUSE LEKS PROXIMITY TO THE ACTION ALTERNATIVE

LEK NAME	ACTIVE / NOT ACTIVE/ HISTORIC	APPROXIMATE DISTANCE FROM THE NEAREST TRANSMISSION LINE SEGMENT
Blackjack W	Unknown	1.8 miles from Segment 6C
Gardner Ranch N	Unknown	1.8 miles from Segment 6C
Ellison Creek N N	Inactive	Within Segment 6C
Runway	Unknown	0.3 miles from Segment 6C
Ellison Creek	Inactive	1.0 miles from Segment 6C
Ellison Knobs	Unknown	1.7 miles from Segment 6C
White River	Active	0.2 miles from Segment 6C

BLM Sensitive and State of Nevada Special Status Species

Pygmy Rabbit: As applicable, effects and mitigation measures concerning pygmy rabbits would be the same as described in **Sections 4.8.2** and **4.8.2.1**.

Raptors: As applicable, effects and mitigation measures concerning raptors would be the same as those described in **Sections 4.8.2** and **4.8.2.1**.

Western Burrowing Owl: Burrowing owls have been observed within Segment 10 (sub-alternative). As applicable, effects and mitigation measures concerning burrowing owls would be the same as those described in **Sections 4.8.2** and **4.8.2.1**.

Banded Gila Monster: As applicable, effects and mitigation measures concerning the banded Gila monster would be the same as those described in **Sections 4.8.2** and **4.8.2.1**.

Kangaroo Mouse: The Action Alternative (Segments 6C, Segment 8, Segment 9B, and Segment 9C) would overlap portions of potentially suitable Dark Kangaroo Mouse habitat. As applicable, effects and mitigation measures concerning kangaroo mice would be the same as described in **Sections 4.8.2** and **4.8.2.1**.

Montane Vole: Under the Action Alternative, impacts to montane vole would be similar to the Proposed Action. The montane vole is generally localized to wetland/riparian areas which would be spanned by the project, so there should be no direct habitat loss. As applicable, effects and mitigation measures concerning montane vole would be the same as described in **Sections 4.8.2** and **4.8.2.1**.

Desert Bighorn Sheep: See discussion of Bighorn Sheep under General Wildlife.

General Wildlife

Pronghorn Antelope: With the exception of some higher elevation areas, pronghorn year-round range exists within all transmission line segments that are north of Segments 9C and 9A (sub-alternative) as well as the RSS-Site B sub-alternative. Impacts to pronghorn would be the same as those described in **Section 4.8.2**.

Mule Deer: Effects to mule deer and mule deer crucial winter range would be the same as the effects discussed in **Section 4.8.2**.

Elk: Elk were observed in the vicinity of the RSS-Site B sub-alternative which is elk year-round habitat. Impacts to elk would be the same as those described in **Section 4.8.2**.

Bighorn Sheep: No occupied Rocky Mountain bighorn sheep range is located near any of the transmission line components. Several transmission line segments for the Action Alternative pass through occupied and potential desert bighorn sheep range (**Figure 3.8-4d**). **Table 4.8-5** below indicates which transmission line segments are within and/or adjacent to occupied desert bighorn sheep range. In general, impacts to bighorn sheep would be the same as those described in **Section 4.8.2**.

TABLE 4.8-5 OCCUPIED DESERT BIGHORN RANGE PROXIMITY TO THE ACTION ALTERNATIVE

TRANSMISSION LINE SEGMENT	PROXIMITY TO TRANSMISSION LINE SEGMENT
Segment 6C	Portions within occupied range surrounding Silver King Pass of the Schell Creek Range
Segment 9A (Sub-Alternative)	Within occupied range
Segment 9C	Within occupied range
Segment 10 (Sub-Alternative)	Portions within occupied range of the Delamar Mountains and adjacent to occupied range along the western foothills of the Meadow Valley Mountains
Segment 11	Portions within occupied range of the Arrow Canyon Range

Waterfowl: Segment 6C passes just south of the southern portion of the Kirch Wildlife Management Area, as described under the Proposed Action, and the northern portion of Segment 9D passes less than a thousand feet from the Pahranagat National Wildlife Refuge. Impacts to, and mitigation measures concerning, waterfowl would generally be the same as those described in **Sections 4.8.2** and **4.8.2.1**.

Operations, Maintenance, and Abandonment

General impacts to wildlife from operations, maintenance, and abandonment activities associated with the transmission facilities would be similar to those described in **Section 4.8.2.**

Threatened, Endangered, Proposed, and Candidate (TEPC) Species

Desert Tortoise: Potential effects to desert tortoise and mitigation measures concerning this species would be identical to those previously discussed in **Section 4.8.2**.

Greater sage-grouse: The effects of operations, maintenance, and abandonment of the transmission line segments under the Action Alternative would be similar to the effects under the Proposed Action. Mitigation measures and BMPs associated with the transmission lines would be similar to those discussed in **Sections 4.8.2** and **4.8.2.1**.

BLM Sensitive and State of Nevada Special Status Species

Pygmy Rabbit: Effects and mitigation measures concerning pygmy rabbits would be the same as those described in **Sections 4.8.2** and **4.8.2.1**.

Raptors (including Bald and Golden Eagles): Effects and mitigation measures concerning raptors would be the same as those described in **Sections 4.8.2** and **4.8.2.1**.

Western Burrowing Owl: Effects and mitigation measures concerning burrowing owls would be the same as those described in **Sections 4.8.2** and **4.8.2.1**.

Kangaroo Mouse: As applicable, effects and mitigation measures concerning kangaroo mice would be the same as described in **Sections 4.8.2** and **4.8.2.1**.

Montane Vole: Effects and mitigation measures concerning montane vole would be the same as those described in **Sections 4.8.2** and **4.8.2.1**.

Desert Bighorn Sheep: Effects and mitigation measures would be the same as those described for Bighorn Sheep in **Sections 4.8.2** and **4.8.2.1**.

General Wildlife

All of the effects to general wildlife due to operations, maintenance, and abandonment of the Action Alternative would be the same as those discussed in **Section 4.8.2**.

4.8.3.1 Mitigation

As applicable for the Action Alternative, mitigation measures for this alternative would be the same as those listed under the Proposed Action (**Section 4.8.2.1**).

4.8.3.2 Unavoidable Adverse Impacts on Wildlife Resources

The Action Alternative would permanently impact wildlife habitat within portions of the long-term ROWs for the transmission facilities and substations. This loss of habitat would be small compared to the available undisturbed wildlife habitat within the project area. These habitat losses could be replaced over decades if the ON Line Project operations and maintenance activities ceased and the project elements were removed.

Some long-term unavoidable adverse effects on wildlife would potentially occur as a result of mortalities during construction and operation activities.

4.8.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources for this alternative would be the same as those discussed under the Proposed Action (**Section 4.8.2.3**).

4.8.3.4 Relationship of Short-term Uses and Long-term Productivity

Short-term uses and long-term productivity for this alternative would be the same as those discussed under the Proposed Action (**Section 4.8.2.4**).

4.8.4 No Action Alternative

Under this alternative there would be no construction or operation of the ON Line Project. Therefore, there would be no loss or modification of wildlife habitat and no direct or indirect impacts to wildlife associated with the ON Line Project.

4.9 Range Resources

4.9.1 Indicators and Methods

Proposed disturbances associated with the ON Line Project would pass through certain allotments and one HMA, and could affect forage resources within the project area over the short and/or long term. Access to water sources and the quality and quantity of water sources available within the direct and indirect effects area of allotments and the HMA could be affected.

The following indicators were considered when describing the affected environment for range resources:

- Number of livestock allotments or HMAs that have one or more elements of the ON Line Project within them, and the AUMs supported by, or horses currently using, or approved to use, these areas.
- Acres of range land to be affected by the ON Line Project.
- Acres of land within an allotment or HMA affected by the ON Line Project.
- Locations of watering holes, springs, and other range improvements in relation to the ON Line Project components.

These indicators were evaluated using the following criteria:

- Percentage of each HMA or allotment in the project area that would be affected.
- Plant communities (ecological sites) with high forage production and their estimated aerial extent within the project area or allotment.
- Estimated number of AUMs lost in each affected allotment or HMA.
- Number of acres of winterfat communities within each project component.
- Number of water sources that would be within, or within 2 miles of the project area, and the availability of other, alternative water sources available within the affected allotments or HMAs.

The following methods were used to evaluate these criteria:

- Using GIS technology, map and measure the extent of the project component in acres or linear feet that are within affected allotment and HMA boundaries and determine the approximate total area of land that would be lost to forage production within these areas due to construction and/or operation of the transmission line facilities in both short- and long-term time frames.
- Using GIS technology, map BLM well and spring data and Nevada State Engineer well data described in **Section 3.9** of this FEIS. Compare this to transmission line segment locations to evaluate whether access to water supplies would be affected by the transmission line facilities.
- Review soils and vegetation data contained in this FEIS (**Sections 3.5** and **3.7**), and review allotment acreage and total AUMs available within each allotment that intersects the project area.
- Review forage production estimates found in the web-based NRCS Ecological Site Description System (NRCS 2004) to identify areas of higher value (> 1,000 lb/ac) forage production within the project area footprint.
- Determine the average number of acres required to support 1 AUM for each allotment, based on allotment acres and AUMs available per allotment. Determine the number of AUMs affected based on estimated acreage affected.
- Determine the acres to be affected in HMAs that are crossed by the project area. Determine the percentage of the HMA that would be affected.

4.9.2 Proposed Action

Construction

Pre-construction surveying, soil testing, and flagging of roads and boundaries would occur months in advance of the start of construction. These activities would not create long-term roadways, trenches, or other land disturbances because of the short-term nature of the work in a given location.

Construction mobilization, equipment yards, and other transmission line facilities components as outlined in **Chapter 2** would include localized blading, cut-and-fill, leveling work, and excavation and foundation construction for transmission line structures. Temporary access roads, wire stringing/pulling sites, and storage yards would be constructed within the ROW whenever possible. Other transmission line facility components (i.e., material storage yards, batch plant sites, and regeneration sites), including access roads that need to be improved or newly constructed within and outside of the transmission ROW would be needed. The final locations for these components would be identified in the final COM Plan in coordination with NV Energy, the construction contractor, and the BLM. In addition, 153 acres of disturbance (41 temporary, 112 permanent, including access road improvements) would occur during construction of the Robinson Summit Substation, and 7 acres would be disturbed at the Falcon Substation. Vegetation would be removed from these areas during their active use, eliminating forage production for the life of construction activities, which is estimated to be 18 to 24 months. Permanent fences would be constructed around the proposed 108-acre Robinson Summit Substation site, and around the 7 acres that would be added to the existing Falcon Substation.

In addition, an access road would be permanently maintained to the Robinson Summit Substation.

In an effort to provide quantification of impacts from structure installation, since actual structure locations are unknown at this time, disturbance during construction was estimated at 1 acre of temporary disturbance and 0.1 acre of permanent disturbance for every transmission line structure (approximately five structures per linear mile) in **Table 4.9-1**, except within desert tortoise habitat where 1.0 acre of permanent disturbance was used.

Any stock water sources within the ROWs for the transmission facilities could likely be avoided, as there is flexibility in locating the actual structures and temporary work areas, thus eliminating potential disturbances to existing water sources used by livestock or wild horses.

<u>Vegetation and Forage Production</u>

The Proposed Action transmission line facilities would pass over a wide range of plant communities as described in **Section 3.7**. Creosote bush and sagebrush are the most common vegetation communities that would be impacted. Structure locations would impact approximately 7 acres of winterfat communities within the proposed ROW for the Proposed Action.

Vegetation and forage production for selected areas within the project area are listed in **Chapter 3**, **Table 3.9-2**, which shows the variability of vegetation/forage productivity rates for the project area. It is important to note that areas with high vegetation/forage production are not common and are limited to areas near streams and drainages. These examples show that much of the land in the project area has poorly developed soils, is far above any water table, is located in a very arid area, and thus has low vegetation and forage productivity.

The exact value of forage lost due to construction of the transmission facilities would depend on the exact location of project elements, which would not be known until construction designs are available. However, a reasonable estimate of the project's potential effects on vegetation and forage production can be determined by taking the total number of permitted and currently active AUMs in an allotment, dividing this by the acreage in the allotment to determine acres per AUMs for each allotment, and then dividing this by the acreage affected in each allotment. This is discussed further in the next sub-section.

As committed to in **Section 2.2.2.2** *Construction Activities: Clearing and Grading*, after line construction, "all work areas identified as temporary disturbance on the structure location drawings would be reclaimed." This would occur in all areas outside of desert tortoise habitat. Re-establishment of vegetation production typically takes about three to five years after a range area has been re-seeded, thus, the duration of these effects would be considered short-term. The quality of re-established vegetation can vary however, as discussed below.

The overall success of revegetation efforts would depend on whether weeds or perennial species grew in after construction was complete. Adverse effects would occur where weedy species became established in areas previously containing significant amounts of perennial vegetation. Beneficial effects would occur where desirable forage species established in previously weedy areas. Total forage value of a successful seeding could equal or exceed pre-project forage production levels. The quality and magnitude of the effects of transmission facility construction on forage resources would be tied to the duration and season in which activities take place on the ground, the productivity of the areas affected, and what vegetation, particularly forage species, persisted after construction. Overall, effects to forage production during construction would be negligible because of the large area of similar, unaffected lands on which forage would be produced.

Livestock Allotments

Although sheep graze parts of the project area, to simplify the analysis, AUM values presented here are based only on those plants that are considered forage for cattle except where sheep are the exclusive grazers.

Potential temporary impacts during construction activities could total approximately 3,200 acres Permanent impacts would total approximately 800 acres. A minor portion of this acreage would not be on public lands and/or within allotments (i.e., Falcon Substation expansion and portions of some transmission facility segments), but for the sake of this analysis, small private inholdings are included.

The Proposed Action passes through 28 allotments which include approximately 3,000,000 acres of range that provide approximately 140,835 AUMs of forage for livestock. Less than 0.1 percent of total allotment acreage would fall within the proposed 200-foot ROW and the Robinson Summit Substation ROW (4,806 acres), and in many places, only a portion of this would be disturbed.

In terms of forage loss, approximately 233 AUMs would be temporarily lost during construction out of about 140,835 total AUMs available on allotments crossed by the project area. Within each allotment, between 0 and 23 AUMs would be temporarily lost during construction, depending on the allotment affected. The total allotment acreage and AUMs per allotment are listed in **Table 3.9-1**.

Table 4.9-1 shows the linear miles to be affected under the Proposed Action in each allotment. It estimates the number of transmission line structures that would be constructed in each allotment, the temporary (1.0 acre) and permanent (0.1 acre) disturbance associated with these structures (with the assumption of flat terrain), and the number of AUMs that would be lost in both short-term (within the 200 foot ROW) and long-term scenarios. It also shows the acreage associated with construction of the Robinson Summit Substation.

TABLE 4.9-1 ACRES OF DISTURBANCE BY ALLOTMENT FOR THE PROPOSED ACTION

PROJECT COMPONENT	ALLOTMENT	LINEAR MILES AFFECTED	NUMBER OF STRUCTURES	DISTURBANCE ACRES[1]		AUMS LOST	
				SHORT-TERM (200-FOOT ROW)	LONG-TERM (STRUCTURES ONLY)	SHORT-TERM (200-FOOT ROW)	LONG-TERM (STRUCTURES ONLY)
Robinson Summit Substation & access road	Thirty Mile Spring	N/A	N/A	153.0	112.0	7	5
Falcon-Gonder Loop-in	Thirty Mile Spring	0.46	2	11.3	0.2	1	<1
Segment 6C	Badger Springs[2]	11.0	55	266.9	5.5	11	<1
	Cove	5.0	25	120.1	2.5	17	<1
	Douglas Canyon	2.3	11.4	55.0	1.1	1	<1
	Douglas Point[2]	4.2	21	101.9	2.1	3	<1
	Forest Moon	11.9	60	289.1	6.0	6	<1
	Fox Mountain	11.0	55	266.7	5.5	22	<1
	Giroux Wash[2]	13.1	66	317.7	6.6	17	<1
	Hardy Springs	9.3	47	225.3	4.7	6	<1
	Indian Jake	4.4	22	105.6	2.2	6	<1
	McQueen Flat[2]	1.2	6	29.7	0.6	4	<1
	North Cove	4.1	21	99.2	2.1	3	<1
	Sunnyside	8.2	41	199.4	4.1	5	<1
	Thirty Mile Spring	2.8	14	66.9	1.4	3	<1
	Tom Plain	9.1	46	221.1	4.6	12	<1
	Wells Station[2]	3.1	16	75.1	1.6	2	<1
	Wilson Creek	2.4	12	59.4	1.2	3	<1

PROJECT COMPONENT	ALLOTMENT	LINEAR MILES AFFECTED	NUMBER OF STRUCTURES	DISTURBANCE ACRES[1]		AUMS LOST	
				SHORT-TERM (200-FOOT ROW)	LONG-TERM (STRUCTURES ONLY)	SHORT-TERM (200-FOOT ROW)	LONG-TERM (STRUCTURES ONLY)
Segment 8	Cliff Springs[2]	7.7	39	186.5	3.8	10	<1
	Ely Springs	11.2	56	271.3	5.6	19	<1
	Ely Springs Sheep	1.7	8	40.2	0.8	7	<1
	Oak Springs	14.2	71	344.6	7.1	16	<1
	Simpson[2]	2.2	11	53.0	1.1	5	<1
	Wilson Creek	19.1	96	462.9	9.6	23	<1
Segment 9A	Buckhorn	7.2	36	174.7	3.6	7	<1
	Lower Lake East	1.0	5	24.5	5.0	0	<1
Segment 9B	Buckhorn	10.86	54	263.2	5.4	11	<1
	Oak Springs	0.01	0	0.2	0.0	0	<1
Segment 9D	Delamar	0.0	0	0.28	1.0	0	<1
	Lower Lake East	9.0	45	212.2	45.0	3	1
Segment 11	Arrow Canyon	This allotment has been relinquished and is inactive.					
	Dry Lake	This allotment has been relinquished and is inactive.					
	Delamar	4.5	23	109.2	2.3	3	<1
	Pittman Well	This allotment has been relinquished and is inactive.					

[1] Used 0.1 acre of permanent impact acreage/structure for calculation purposes, except in desert tortoise habitat.
[2] These allotments would have the highest percent AUM loss, which would be less than 1 percent.

The allotment with the most acres affected due to transmission facilities construction is Wilson Creek located in northwest Lincoln County. Segment 6C and Segment 8 would pass through this allotment. Transmission construction activities could temporarily impact approximately 522 acres in this 1,071,661 acre allotment, although only 11 acres would be disturbed for transmission tower construction. This is 0.04 percent of the acreage in the allotment. At an average of 20 acres per AUM in this allotment, the project could temporarily affect 26 AUMs. Out of 54,070 AUMs, this is less than 1 percent of the AUMs available.

The allotment with the highest proportion of its ROW acres affected is the Badger Springs allotment, a mid-size allotment on the north end of the project area. Approximately 267 acres (0.8 percent of its acreage) would be affected by the ROW, while 6 acres would be disturbed for transmission structure construction. At an average of 24 acres per AUM, and if the whole ROW were affected, the project could affect 11 AUMs during construction. Out of 1,412 AUMs in the allotment, the project would affect less than 1 percent of the AUMs available.

Both of these situations would result in negligible impacts. Since all other allotments would have a lower percentage of their lands affected, it can be assumed that effects on all allotments are similar and thus negligible.

None of the allotments within the direct and indirect effects area in the Southern Nevada District Office boundary are active. This includes the Arrow Canyon, Pitman Well, and Dry Lake allotments. The AUMs in these allotments have been relinquished. Thus, there would be no effects to livestock in these allotments.

No fencing of transmission line structures would occur during construction. Livestock would be able to access virtually all of the acreage within the transmission facilities ROW, with the exception of construction areas at the Robinson Summit and Falcon Substations. However, the short-term acreage lost during construction at the Robinson Summit Substation (approximately 153 acres) would be less than 0.1 percent of the acres in the allotment. The Falcon Substation is located on private ground, and thus is not within an allotment administered by the BLM. Effects of the construction of transmission facilities on allotments, including substation construction and expansion, would be negligible and mainly short-term in duration once the majority of disturbed acreage is successfully reclaimed. Negligible long-term impacts would also occur from permanent disturbances.

Three sheep trails run through the project area and would be temporarily impacted in the Thirty Mile Spring, Badger Springs, Giroux Wash, and Forest Moon allotments. Since the trails are within the allotments, the impacted acres of trail do not increase the total acres of range resources impacted. The trail markers (cedar posts) put in during the 1940s to mark the sheep trail boundaries would not be moved or disturbed by construction.

The Robinson Summit Substation would be located within the sheep trail. Vegetation clipping data was collected in June 2010 from the substation site to evaluate whether the proposed site had markedly different forage than the RSS-Site B sub-alternative substation site. These data indicate that the area in and around the proposed Robinson Summit Substation site provides much more forage for sheep than cattle: each acre provides roughly 1 AUM of forage for sheep. Therefore, there would be a long-term loss of 108 AUMs for sheep and 3.6 AUMs for cattle from construction of the Robinson Summit Substation.

The area surrounding the proposed substation supports similar vegetation that would be available to cattle and sheep. Impacts to livestock grazing, for both cattle and sheep, would be negligible in both the short term and long term.

Herd Management Areas

For the Proposed Action, about 655 acres in the Silver King HMA could be impacted during construction activities (this includes the entire 200-foot ROW corridor which would not be completely disturbed). This would be a temporary loss of about 1 percent of all of the acreage available to horses within this HMA. Horses utilizing the area would likely be displaced into adjacent lands during construction activities due to increased noise and activity; however, this would be a negligible and short-term impact.

Effects of transmission facility construction on the Silver King HMA would be negligible and short-term in duration. Long-term impacts from the presence of transmission facilities would also be negligible.

Water Sources

There are no mapped water sources within 2 miles of the Proposed Action facilities. However, there may be springs or ponds that are utilized by livestock or wild horses that have not been recorded or mapped. If construction activities came near water supply locations, livestock or horses might be skittish of the activity and avoid these areas. However, all activities except those associated with equipment and staging areas would move steadily across the landscape, allowing animals time to get used to, or avoid, construction workers and activities.

Temporary access roads and transmission structure locations would be shifted to the extent possible to avoid direct impacts on springs or other range improvements. Erosion control, using effectively installed BMPs, would protect nearby water sources. There would be negligible and transient effects on access to, and quality of, watering holes and range improvements. There would be no significant use of water in the construction and maintenance of power lines, thus no drawdown of water wells is expected. No effects to water quantity or quality are anticipated.

Operations, Maintenance, and Abandonment

Permanent long-term impacts across the project area would total approximately 120 acres in 28 livestock allotments, and 13.5 acres in 1 HMA due to transmission structure placement. The only allotments with measurable AUM loss over the long-term would be the Thirty Mile Spring allotment (5 AUMs) and the Lower Lake East allotment (1 AUM). For all allotments, changes would amount to less than 1 percent of the AUMs available in each allotment. Forage losses for sheep would be higher, but are offset by the increased value of forage in surrounding undisturbed lands.

Approximately 112 acres would be disturbed for the long term at the Robinson Summit Substation within the 188,872-acre Thirty Mile Spring allotment. This substation location is not within an HMA. The Falcon Substation is not within an allotment or an HMA, thus no impacts to BLM-administered allotments or HMAs are expected from the expansion of this substation.

In the long term, approximately 961 structures would occupy 96.1 acres of livestock allotment lands, and 135 structures would occupy 13.5 acres of land within the Silver King HMA under the Proposed Action.

Long-term periodic maintenance to the transmission line facilities may require access to the corridor via existing roads and may result in temporary disturbance to forage resources, livestock, and/or wild horses; however, this effect would be negligible.

No water sources have been identified within the Proposed Action area. No effect to water sources is expected.

4.9.2.1 Mitigation

Additional mitigation measures are not required.

4.9.2.2 Unavoidable Adverse Impacts on Range Resources

Construction activities would result in a less than 1 percent loss of rangeland available to livestock and wild horses for grazing. Reclamation of disturbed lands can result in poorer vegetation productivity than the native rangeland, although this is not always the case. In areas that are already degraded by weeds, seeding efforts completed in the fall before a good growing year occurred could result in improved forage values.

4.9.2.3 Irreversible and Irretrievable Commitments of Resources

Construction of the transmission line facilities would result in the long-term commitment of a small (less than 1 percent) amount of rangeland resources available to livestock and wild horse grazing because of the presence of transmission line structures, construction of the Robinson Summit Substation, and expansion of the Falcon Substation. This would cause a slight decrease in the acreage and forage available to grazing animals. These changes would be small compared to the forage and rangeland resources available within the area. Impacts would be negligible.

4.9.2.4 Relationship of Short-term Uses and Long-term Productivity

Most impacts to range resources would result from relatively short-term construction activities, although a negligible amount of long-term impacts from project elements would persist for the operational life of the project. The impacts from construction and operation of the transmission line facilities are minor and would not affect long-term productivity.

4.9.3 Action Alternative

Construction

Construction of the transmission facilities for the Action Alternative would be similar to those described under the Proposed Action. The Action Alternative utilizes a slightly different route along each segment as described in **Chapter 2** and utilizes Segment 9C instead of 9A. Segments 9A and 10 are sub-alternative segments to the Action Alternative. The RSS-Site B is a sub-alternative to the Robinson Summit Substation.

The Action Alternative route so closely parallels the Proposed Action route in Segments 6C, 8, 9B and 9D, that effects to range and wild horse resources along these segments would be virtually the same as those anticipated for the Proposed Action.

The major differences between the Action Alternative and the Proposed Action involve two transmission alignment sub-alternative options and one substation sub-alternative location option. These options are discussed in more detail below.

<u>Vegetation and Forage Production</u>

Segment 9C*:* The vegetation and forage in the area of the Segment 9C is a mix of shrubs and grass of similar type and value to that encountered in Segment 9A. This segment does not pass through measurable areas of high forage productivity soils. If Segment 9C were constructed, effects to vegetation and forage production would be similar to those expected in the Proposed Action: effects would be negligible compared to the amount of forage available in the surrounding area. More information about forage value, in terms of AUMs affected, is included in the Livestock Allotments section below.

Segment 10 Sub-alternative: This segment would be a sub-alternative to the Action Alternative route and would replace all of Segment 9. Forage in the area of the Segment 10 sub-alternative is generally of similar value and type to that identified in the Proposed Action Segments 9C, 9B, and 9D except in areas with Geta soils, found almost entirely within the Grapevine allotment. These high-productivity soils are deep and are dominated by big Galleta (*Pleuraphis rigida*), and other grasses such as bush muhly (*Muhlenbergia porteri*), and Indian ricegrass (*Achnatherum hymenoides*). More information about forage value, in terms of AUMs affected, is included in the Livestock Allotments section below.

A map showing the extent of these soils can be found on figures in **Appendix 3A**.

The effects of construction on forage resources within the Segment 10 sub-alternative would be negligible.

Segment 9A Sub-Alternative: This segment would be a sub-alternative to the Action Alternative route and would replace Segment 9C. The impacts for this segment would be the same as those described under Segment 9A of the Proposed Action.

RSS-Site B Sub-Alternative: This sub-alternative would replace the Robinson Summit Substation. Forage in this area is dominated by a mix of black and Wyoming sagebrush.

The Action Alternative would follow the same commitments as the Proposed Action, and impacts would be similar to those presented in **Section 4.9.2**.

<u>Livestock Allotments</u>

Although sheep graze parts of the project area, to simplify the analysis, AUM values presented here are based only on those plants that are considered forage for cattle.

Segment 9C: This segment passes through the Buckhorn and Lower Lake East allotments, which provide a total of 4,010 AUMs of forage for livestock. Approximately 160 acres (less than 1 percent of the acreage in the two allotments) are included in the ROW, although only 33 acres would be disturbed for structure construction. Long-term disturbance would drop to 3.3 acres.

The Buckhorn allotment requires an average of 24 acres per AUM, while Lower Lake East requires an average of 82 acres per AUM. These lands support similar vegetation to that described under the Proposed Action for these segments. Approximately 6 AUMs (less than 1 percent) would be affected during construction if the entire ROW were disturbed. Less than 1 AUM would be lost for the long term.

Segment 9C would require construction of fewer structures than the Proposed Action. Total transmission line alignment acreage in this segment would be similar to the acreage for the Proposed Action. Linear miles affected, number of structures, temporary and permanent disturbance acreage, and AUMs affected for Segments 9C and 9A are shown in **Table 4.9.2** below, and **Table 4.9.1**, above. The route is shown on **Figure 2.2.1b**. The effects of construction on livestock allotments under this alternative would be similar to that expected of the Proposed Action, and would be short-term and negligible.

TABLE 4.9-2 DISTURBANCE ACRES BY ALLOTMENT FOR THE ACTION ALTERNATIVE

PROJECT COMPONENT	ALLOTMENT	LINEAR MILES AFFECTED	NUMBER OF STRUCTURES	DISTURBANCE ACRES*		AUMS LOST	
				SHORT-TERM (200-FOOT ROW)	LONG-TERM (STRUCTURES ONLY)	SHORT-TERM (200-FOOT ROW)	LONG-TERM (STRUCTURES ONLY)
RSS-Site B sub-alt & access road	Badger Springs	N/A	N/A	111.9	66.6	5	3
	Tom Plain	N/A	N/A	3.1	3.1	<1	<1
Falcon-Gonder Loop-in	Thirty Mile Spring	5.1	27	98.9	2.7	5	<1
	Badger Springs	3.4	18	65.9	1.8	3	<1
Segment 6C	Badger Springs	10.9	55	264.0	5.4	11	<1
	Cove	4.8	24	116.4	2.4	17	<1
	Douglas Canyon	2.3	11	55.1	1.1	1	<1
	Douglas Point	4.2	21	101.2	2.1	3	<1
	Forest Moon	11.6	58	282.3	5.8	5	<1
	Fox Mountain	12.0	60	290.4	6.0	24	1
	Giroux Wash	14.7	74	356.3	7.4	19	<1
	Hardy Springs	9.5	47	229.7	4.7	6	<1
	Indian Jake	3.1	15	73.9	1.5	4	<1
	McQueen Flat	1.6	8	37.8	0.8	2	<1
	North Cove	4.1	20	99.1	2.0	3	<1
	Sunnyside	6.5	32	156.7	3.2	4	<1
	Thirty Mile Spring	3.0	15	71.5	1.5	3	<1
	Tom Plain	8.5	43	206.7	4.3	11	<1
	Wells Station	3.0	15	72.9	1.5	2	<1
	Wilson Creek	3.5	18	85.3	1.8	4	<1

PROJECT COMPONENT	ALLOTMENT	LINEAR MILES AFFECTED	NUMBER OF STRUCTURES	DISTURBANCE ACRES*		AUMS LOST	
				SHORT-TERM (200-FOOT ROW)	LONG-TERM (STRUCTURES ONLY)	SHORT-TERM (200-FOOT ROW)	LONG-TERM (STRUCTURES ONLY)
Segment 8	Buckhorn	0.1	0	2.3	0.1	0	<1
	Cliff Springs	7.6	38	183.0	3.8	10	<1
	Ely Springs	11.2	56	272.3	5.6	19	<1
	Ely Springs Sheep	1.2	6	29.00	0.6	5	<1
	Oak Springs	14.3	72	347.3	7.2	17	<1
	Simpson	2.7	13	64.5	1.3	6	<1
	Wilson Creek	19.2	96	466.1	9.6	23	<1
Segment 9A (sub-alternative)	Buckhorn	7.28	36	176.29	3.6	7	<1
	Lower Lake East	1.11	6	26.78	0.6	0	<1
Segment 9B	Buckhorn	10.86	54	263.2	5.4	11	<1
	Oak Springs	0.01	0	0.2	0.0	0	<1
Segment 9D	Delamar	0.0	0	0.28	0.0	0	<1
	Lower Lake East	9.0	45	212.2	4.5	3	<1
Segment 9C	Buckhorn	5	25	122.2	2.5	5	<1
	Lower Lake East	1.5	8	37.2	0.8	0	<1
Segment 10 (sub-alternative)	Buckhorn	2.5	13	59.5	1.3	2	<1
	Delamar	31.7	159	769.1	15.9	21	<1
	Grapevine	11.4	57	276.8	5.7	38	<1
Segment 11	Arrow Canyon	This allotment has been relinquished and is inactive.					
	Dry Lake	This allotment has been relinquished and is inactive.					
	Delamar	4.5	23	109.2	2.3	3	<1
	Pittman Well	This allotment has been relinquished and is inactive.					

* Used 0.1 acre of permanent impact acreage/structure for calculation purposes. However, in areas of steep terrain, structures could result in permanent disturbance of up to as much as 1.0 acre/structure.

Segment 10 Sub-alternative: The Segment 10 sub-alternative to the Alternative Action would pass through the Delamar, Grapevine, and a small corner of the Buckhorn allotments, which cover approximately 305,664 acres and provide approximately 9,488 AUMs of forage. The route is shown on **Figure 3.9-1b**. A total of 1,105 acres could be affected under this alternative (includes the entire 200 foot ROW). Approximately 30 AUMs would be lost over the short term during construction, with approximately 1 AUM lost during operation.

This route would require the construction of approximately 38 more structures than the Proposed Action along Segments 9A, 9B, and 9D.

While most of the soils, and hence forage available for livestock grazing, are similar to the proposed actions for this portion of the route, there is one large area of high-productivity soils: the Geta soils. These soils produce around 1,000 to 1,600 pounds of vegetation and 800 to 1,200 pounds of forage in a typical year. On these soils, only 1 or 2 acres are required to provide an AUM of forage. These soils cover approximately 215 acres of the 277 acre short-term ROW through the Grapevine allotment.

At an average of 1.5 acres per AUM, the entire 215 acres of ROW passing over Geta soils would provide approximately 143 AUMs out of the 560 available on the allotment (26 percent). This would be a major, short term impact to the Grapevine allotment. However, these higher-productivity soils also cover a large area outside of the ROW in this allotment, and actual tower construction disturbance would likely be approximately 57 acres (1 acre disturbance per structure) Thus, estimated AUM loss could be closer to 38 (7 percent) if no associated disturbances, such as lay-down yards and staging areas, were located within the Grapevine allotment. This would be a minor, short term impact.

The impacts to the three sheep trails that run through the project area would be similar to those described under the Proposed Action.

Segment 9A Sub-alternative: The Segment 9A sub-alternative to the Alternative Action would be the same as that described for Segment 9A under the Proposed Action.

RSS-Site B Sub-alternative: This sub-alternative substation location would be within the Badger Springs allotment. Associated access roads would be located within the Badger Springs and Tom Plain allotments. The Falcon-Gonder Loop-in would be within the Badger Springs and Thirty Mile Spring allotments.

During construction, approximately 178 acres could be temporarily disturbed in the Badger Springs allotment, and 3.1 acres would be disturbed in the Tom Plain allotment, considering the entire ROW. Approximately 98.9 acres would be disturbed in the Thirty Mile allotment. This would be a temporarily loss of roughly 8 AUMs from the Badger Springs allotment, less than 1 from the Tom Plain allotment, and 5 from the Thirty Mile Spring allotment.

Like the proposed Robinson Summit Substation site, the proposed RSS-Site B sub-alternative would partially be within the Jakes Unit sheep trail. Based on June 2010 clipping data, the RSS-Site B sub-alternative requires approximately 1.1 acres per AUM for sheep forage. If the RSS-Site B sub-alternative were constructed, there would be a long-term loss of 54.5 AUMs of sheep forage. Because the area around the proposed substation supports similar vegetation, this would be a negligible impact in both the short term and long term.

There are sheep corrals within 3 miles of the proposed RSS-Site B sub-alternative site. These would not be affected by project construction and there would be no measurable impacts to the corrals.

The effects of construction activities on livestock allotments, for both cattle and sheep, would be negligible to minor and short term in duration.

Horse Management Areas

Acreage affected in the Silver King HMA under the Action Alternative would be about 664 acres, very similar to that listed under the Proposed Action.

Impacts to the Silver King HMA due to construction activities and presence of transmission facilities would be as described under the Proposed Action. Please refer to **Section 4.9.2**.

Water Sources

Segment 9C: There are no stockwatering facilities within 2 miles of Segment 9C of the transmission facilities.

Segment 10 Sub-alternative: There are 3 stock watering facilities within 2 miles of the Segment 10 sub-alternative. Two are reservoirs and one is a tank. As there is some flexibility in locating power lines, structures, and access roads, it is unlikely that these water sources would be affected, thus no impacts are expected.

Impacts to other water sources due to construction activities would be as described under the Proposed Action. Please refer to **Section 4.9.2**.

Operations, Maintenance, and Abandonment

Long term impacts associated with operations, maintenance, and abandonment would be similar to those described under the Proposed Action. If the RSS-Site B sub-alternative were selected approximately 68 acres would be affected within the 33,775-acre Badger Springs allotment, 3.1 acres would be affected in the 81,080 acre Tom Plain allotment, and 2.7 acres would be affected in the 188,872-acre Thirty Mile Spring allotment. The RSS-Site B sub-alternative location is not within an HMA. Long-term impacts would be negligible.

Long-term periodic maintenance to the transmission line facilities may require access to the corridor via existing roads and may result in temporary disturbance to forage resources, livestock, and/or wild horses; however, this effect would be negligible.

Two water sources have been identified within 2 miles of the Action Alternative area. These can be avoided, thus no effect to water sources is expected.

4.9.3.1 Mitigation

Acres of temporary disturbance (i.e., temporary stage areas, wire-pulling sites, etc.) during construction should be minimized in the Geta soils, within the Grapevine allotment (Segment 10 sub-alternative) to minimize disturbance within these highly-productive soils for range forage.

4.9.3.2 Unavoidable Adverse Impacts on Range Resources

Unavoidable and adverse impacts to range resources would be similar to those described in the Proposed Action.

4.9.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of range resources would be the same as those described in the Proposed Action, as related to impacts associated with the Action Alternative.

4.9.3.4 Relationship of Short-term Uses and Long-term Productivity

The relationship of short-term uses and long-term productivity would be the same as that described in **Section 4.9.2.4**.

4.9.4 No Action Alternative

Under the No Action Alternative, there would be no project-related impacts to range resources.

4.10 Cultural Resources

4.10.1 Indicators and Methods

The term "historic property" is defined in the NHPA as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places (NRHP)"; such term includes artifacts, records, and remains which are related to such district, site, building, structure, or object. 16 U.S.C. Section 470(w)(5).

The following indicators were considered when analyzing potential impacts to historic properties (i.e., NRHP-eligible cultural resources):

- The number of NRHP-eligible sites impacted
- The projected number of acres of NRHP-eligible site area impacted
- Known historic features in or adjacent to project components
- The number of historic resources within the viewshed potentially impacted indirectly by the project

No TCPs, as defined in **Section 3.10**, have been identified in the project area. Therefore discussion of TCPs will not be carried forward in the impact analysis.

Assessment of potential effects or impacts on cultural resources is based on the NHPA regulations that define an effect as a direct or indirect alteration to the characteristics of a "historic property" that qualify it for inclusion in the NRHP. Adverse effects diminish the integrity of a property's location, setting, design, materials, workmanship, feeling, or association.

As defined in 36 CFR 800.5, adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;

(iii) Removal of the property from its historic location;

(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

(v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;

(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

(vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

In accordance with the Programmatic Agreement (**Section 3.10.1** and **Appendix 3E**), BLM, in consultation with the Nevada State Historic Preservation Office (SHPO), shall to the extent practicable ensure that effects to historic properties be avoided through project design, redesign, or relocation of facilities where feasible. When avoidance is not feasible an appropriate treatment plan shall be designed, in consultation with SHPO, to lessen or mitigate project-related effects to historic properties.

4.10.2 Proposed Action

Potential impacts to cultural resources that are common to the Proposed Action and Action Alternative include the following and are described in detail below.

- Direct impacts to prehistoric and historic sites
- Discovery of unanticipated finds during construction
- Discovery of human remains during construction
- Increased traffic and accessibility
- Impacts to remaining unevaluated sites
- Access roads impacts

Where project-specific inventories were conducted, the numbers of NRHP-eligible sites potentially impacted have been presented. Where project-specific site data was not available, a quantified prediction of impacts to prehistoric and historic NRHP-eligible sites in acres was calculated based on sensitivity modeling conducted for this project (Carpenter et al. 2008). Due to the fact that the relatively few historic-period sites recorded near the project area are linear in nature, historic concerns are also assigned based on known historic sites present in or adjacent to project components.

Table 4.10-1 presents both specific and projected potential impacts to NRHP-eligible sites.

TABLE 4.10-1 POTENTIAL CULTURAL RESOURCE IMPACTS UNDER THE PROPOSED ACTION

PROJECT COMPONENT	NRHP-ELIGIBLE SITES IMPACTED	PROJECTED ACRES OF PREHISTORIC NRHP-ELIGIBLE SITES	PROJECTED ACRES OF HISTORIC NRHP-ELIGIBLE SITES
Segment 6C	**	131.43	2.3
Segment 8	**	3.47	0.0
Segment 9A	0	n/a	n/a
Segment 9B	**	0.0	0.0
Segment 9D	**	47.88	0.0
Segment 11	**	22.08	0.0
Robinson Summit Substation	[redacted]	n/a	n/a
Falcon Substation Expansion	0	n/a	n/a
Totals	**2**	**204.86**	**2.3**

Source: Carpenter et al. 2008
** A Class III cultural resource inventory would be conducted prior to construction activities to determine presence of and impacts to NRHP-eligible cultural resource sites
n/a – Not applicable; component has been inventoried for cultural resources.

Construction

Prehistoric and historic sites eligible for listing in the NRHP are distributed throughout the project area. Direct impacts to prehistoric and historic sites, including surface or subsurface disturbance incurred during project construction could occur anywhere along the Proposed Action. Activities such as access road improvements; transmission line and substation construction, including foundations, structure pads, and guy wire anchor points; vegetation management; and material yards for construction equipment and personnel have the potential to disturb NRHP-eligible cultural resources. These potential impacts would occur during the construction phase.

As stated in the Programmatic Agreement (**Appendix 3E**), all sites would be avoided where practicable by project design. If avoidance becomes an issue, further mitigation must be taken by the Proponent in accordance with the Programmatic Agreement. During construction activities, any unanticipated cultural resources discovered would require that all work within a 50-meter area cease immediately and the BLM archaeologist notified immediately. The BLM would then resolve the nature of the find in terms of nature and significance and would consult with SHPO and appropriate tribes regarding treatment, if necessary.

Robinson Summit Substation

There would be two NRHP-eligible sites impacted by the Robinson Summit Substation construction. The physical destruction of or damage to all or part of NRHP-eligible sites would destroy or diminish the characteristics that make them eligible for the NRHP. Impacts would be mitigated through data recovery studies and/or other appropriate treatment as described in the Programmatic Agreement. With mitigation efforts, impacts would be minor to moderate and long-term.

Falcon Substation Expansion

There would be no impacts to known cultural resources sites at the Falcon Substation Expansion.

Transmission Line Facilities

According to the sensitivity analysis (**Section 3.10.3.5**), it is projected that approximately 205 acres of prehistoric and 2.3 acres of historic NRHP-eligible sites would be present along the Proposed Action transmission line alignment. Transmission line structure placement would be modified to avoid and span eligible sites where possible. Historic concerns along the transmission line alignment include potential impacts to the Currant Mining District, Midland Highway, Ranches/Farming areas, Mining/Ranching areas, and the historic route of US-93. The physical destruction of or damage to all or part of eligible sites that cannot be avoided would destroy or diminish the characteristics that make them eligible for the NRHP. Impacts could potentially be avoided through construction design modification or mitigated through data recovery studies. Impacts would likely be minor to moderate and long-term.

Operations, Maintenance, and Abandonment

No additional direct impacts to NRHP-eligible cultural resources from operations, maintenance, and abandonment at the Robinson Summit Substation and the Falcon Substation would be anticipated.

Unless fenced or otherwise protected, NRHP-eligible sites within the long-term transmission line ROW could be inadvertently impacted during operation and maintenance of the transmission line facilities. Disturbance could potentially occur during activities such as routine vegetation

removal and emergency repairs. Further, public access into these areas increases the potential for unauthorized artifact collection and vandalism at these sites.

4.10.2.1 Mitigation

Additional mitigation measures are not required.

4.10.2.2 Unavoidable Adverse Impacts on Cultural Resources

Unavoidable or residual adverse impacts to NRHP-eligible cultural resource sites could include compromised site integrity and loss of data due to physical damage to the sites. Impacts would be mitigated to the extent possible through data recovery or other appropriate treatment prior to any construction activities through an approved treatment plan. The presence of upgraded public access roads could lead to increased casual visitation to nearby site locations resulting in greater vulnerability to site disturbance, unauthorized artifact collection, and vandalism.

4.10.2.3 Irreversible and Irretrievable Commitments of Resources

Any loss of context or destruction of NRHP-eligible or unevaluated cultural resource sites would constitute an irreversible commitment of that resource. This loss would be site-specific, as well as a loss of cumulative data on the local and regional level. Mitigation of impacts through data recovery would also constitute an irreversible commitment of that resource.

4.10.2.4 Relationship of Short-term Uses and Long-term Productivity

The short-term use of the area during project activities would result in adverse effects to cultural resource sites located within the project area. These impacts would be mitigated to the extent possible through data recovery or other appropriate treatment. The potential for inadvertent damage or destruction of cultural sites during construction, operation, maintenance, or associated activities, could result in the loss of significant information. Further, information and data retrieved through mitigation measures (i.e., data recovery) would represent short-term use of cultural resources at the expense of future research opportunities. Therefore, long-term productivity would be lost.

4.10.3 Action Alternative

Construction

Robinson Summit Substation

Impacts to cultural resources from construction of the Robinson Summit Substation would be of the same types as those described under the Proposed Action.

RSS-Site B Sub-Alternative

There would be three NRHP-eligible sites impacted by the RSS-Site B sub-alternative construction. The physical destruction of or damage to all or part of NRHP-eligible sites would destroy or diminish the characteristics that make them eligible for the NRHP. Impacts would be mitigated through data recovery studies and/or other appropriate treatment as described in the Programmatic Agreement. With mitigation efforts, impacts would be minor to moderate and long-term.

Falcon Substation Expansion

Impacts to cultural resources from the expansion of the Falcon Substation would be of the same types as described under the Proposed Action.

Transmission Line Facilities

According to the sensitivity analysis (**Section 3.10.3.5**), it is projected that approximately 196 acres of prehistoric and 2.3 acres of historic NRHP-eligible sites would be present along the Action Alternative transmission line alignment (using either Segment 9C or sub-alternative 9A). Transmission line structure placement would be modified to avoid and span eligible sites where possible. Historic sites potentially impacted by transmission line facilities include Midland Highway, Historic US-93, Currant Mining District, and known historic ranching/farming areas. Impacts could potentially be avoided through construction design modification or mitigated through data recovery studies. Impacts would likely be minor to moderate and long-term.

If sub-alternative Segment 10 were utilized rather than Segments 9A, 9B, 9C, and 9D, then it is projected that about 149 acres of prehistoric NRHP-eligible sites, 2.3 acres of historic NRHP-eligible sites, and 10 documented (and recommended) NRHP-eligible sites would be present along the Action Alternative transmission line alignment.

Table 4.10-2 presents both specific and projected potential impacts to NRHP-eligible sites.

TABLE 4.10-2 POTENTIAL CULTURAL RESOURCE IMPACTS UNDER THE ACTION ALTERNATIVE

PROJECT COMPONENT	NRHP-ELIGIBLE SITES IMPACTED	PROJECTED ACRES OF PREHISTORIC NRHP-ELIGIBLE SITES	PROJECTED ACRES OF HISTORIC NRHP-ELIGIBLE SITES
Segment 9C	**	124.02	2.3
Segment 8	**	3.5	0.0
Segment 9A (Sub-Alternative)	0	n/a	n/a
Segment 9B	**	0.0	0.0
Segment 9C	**	0.0	0.0
Segment 9D	**	46.22	0.0
Segment 10 (Sub-Alternative)	10	n/a	n/a
Segment 11	**	21.84	0.0
Robinson Summit Substation	2	n/a	n/a
RSS-Site B Sub-Alternative (includes access roads)	3	n/a	n/a
Falcon to Gonder Loop-in associated with RSS-Site B Sub-Alternative	0	n/a	n/a
Falcon Substation Expansion	0	n/a	n/a

Source: Carpenter et al. 2008, Gilreath et al. 2010
** A Class III cultural resource inventory would be conducted prior to construction activities to determine presence of and impacts to NRHP-eligible cultural resource sites
n/a – Not applicable

Operations, Maintenance, and Abandonment

Impacts to cultural resources during operations, maintenance, and abandonment would be similar to those described under the Proposed Action.

4.10.3.1 Mitigation

Additional mitigation measures are not required.

4.10.3.2 Unavoidable Adverse Impacts on Cultural Resources

Unavoidable or residual adverse impacts to cultural resource sites would be similar to those described under the Proposed Action.

4.10.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments would be similar to that described under the Proposed Action.

4.10.3.4 Relationship of Short-term Uses and Long-term Productivity

Short-term uses and long-term productivity would be similar to that described under the Proposed Action.

4.10.4 No Action Alternative

Under the No Action Alternative, the ON Line Project would not be constructed and there would be no associated project impacts on NRHP-eligible cultural resource sites (historic properties) or historic resources.

4.11 Native American Concerns

4.11.1 Indicators and Methods

The analysis of potential impacts to Native American Concerns is based on a review of known tribal interests, traditional cultural places, trust assets/treaty rights resources, and consultation with the potentially affected Tribes (see **Section 3.11.3**).

There are 12 potential places of cultural and/or geographic interest to the Tribes within or near the project area. No formal or informal issues or concerns have been raised to date by the various Tribes regarding any religious or traditional cultural property concerns for the ON Line Project.

Impacts to prehistoric cultural resource sites are disclosed in **Section 4.10**. Consultation with the Tribes regarding impacts to NRHP-eligible prehistoric cultural resource sites is required under Section 106 of the NRHP.

4.11.2 Proposed Action

There would be no direct or indirect construction or operational impacts to known places of cultural and/or geographic interest to the Tribes associated with components of the Proposed Action except where noted below.

Segment 6C

There could be direct impacts to one potential place of cultural and/or geographic interest as well as possible indirect impacts to another five places located in the general vicinity of this segment. Consultation with the Tribes is ongoing. No concerns have been raised to date by the Tribes.

Segment 9A

One potential place of cultural and/or geographic interest to the Tribes is located near the southwest portion of this segment. It is unknown if there would be indirect impacts. Consultation with the Tribes is ongoing. No concerns have been raised to date by the Tribes.

Segment 9B

One potential place of cultural and/or geographic interest to the Tribes is located near the southwest portion of this segment. It is unknown if there would be indirect impacts. Consultation with the Tribes is ongoing. No concerns have been raised to date by the Tribes.

Segment 9D

One potential place of cultural and/or geographic interest to the Tribes is located near the southwest portion of this segment. It is unknown if there would be indirect impacts. Consultation with the Tribes is ongoing. No concerns have been raised to date by the Tribes.

Segment 11

One potential place of cultural and/or geographic interest to the Tribes is located near this segment. It is unknown if there would be indirect impacts. Consultation with the Tribes is on-going. No concerns have been raised to date by the Tribes.

Various Tribes have been consulted or informed of the proposed project components, and no specific concerns have been raised to date by these various tribes regarding any religious site, sacred site, or traditional cultural property. If Native American concerns emerge through consultation, BLM will consult with the appropriate Tribe(s) and individuals to obtain information about those concerns, the importance of the resource, and what mitigation measures might be appropriate, such that BLM can determine an appropriate course of action taking that information into account.

4.11.2.1 Mitigation

Additional mitigation measures are not required.

4.11.2.2 Unavoidable Adverse Impacts on Native American Concerns

There would be no unavoidable adverse impacts on Native American Concerns.

4.11.2.3 Irreversible and Irretrievable Commitments of Resources

There would be no irreversible or irretrievable commitments of resources of Native American Concern.

4.11.2.4 Relationship of Short-term Uses and Long-term Productivity

In the short term, there would be no impacts to known Native American concerns. There would not be impacts to long-term productivity.

4.11.3 Action Alternative

The impacts of the construction, operations, maintenance, and abandonment of the transmission facilities would be similar to those described above in **Section 4.11.1** with addition of the alternatives below.

Segment 9C

There would be no direct or indirect impacts to known potential places of cultural and/or geographic interest to the Tribes along Segment 9C.

Segment 9A Sub-alternative

This would be the same as discussed under the Proposed Action.

Segment 10 Sub-alternative

One potential place of cultural and/or geographic interest to the Tribes is located near this segment. It is unknown if there would be indirect impacts. Consultation with the Tribes is ongoing. No concerns have been raised to date by the Tribes.

RSS-Site B Sub-alternative

One potential place of cultural and/or geographic interest to the Tribes is located about 5 miles west of this sub-alternative substation location. It is unknown if there would be indirect impacts. Consultation with the Tribes is ongoing.

4.11.3.1 Mitigation

Additional mitigation measures are not required.

4.11.3.2 Unavoidable Adverse Impacts on Native American Concerns

There would be no unavoidable adverse impacts on Native American Concerns.

4.11.3.3 Irreversible and Irretrievable Commitments of Resources

There would be no irreversible or irretrievable commitments of resources of Native American concern.

4.11.3.4 Relationship of Short-term Uses and Long-term Productivity

In the short term, there would be no impacts to known Native American concerns. There would not be impacts to long-term productivity.

4.11.4 No Action Alternative

No ON Line Project related impacts on Native American concerns would occur under the No Action Alternative.

4.12 Land Use

4.12.1 Land Use Plans and Policies

The BLM Land Use Plans that apply to the project area (i.e., Ely and Las Vegas RMPs in **Section 3.12.3.1**) tend to favor a balanced approach to land management that protects fragile resources but doesn't overly restrict the development of other resources for economic goods and services. The Ely RMP management objectives state that "Encouraging co-location of land use authorizations would reduce or localize impacts to other resources" (BLM 2008a, p.4.12-5); however, this does not preclude granting ROWS outside designated utility corridors. None of the action alternatives analyzed in this FEIS appear to conflict with the management goals and objectives of the current RMPs and the Caliente Management Framework Plan (MFP) and Desert Tortoise Amendment.

County land use plans for the southern counties (i.e., Lincoln and Clark) tend to be more developed than those in the northern part of the project area (i.e., White Pine, Eureka, and Nye). This is indicative of the greater growth and population in the south, particularly in Clark County. The location of proposed ROWs would not conflict with any county zones or land use designations.

4.12.2 Land Use and Ownership

The dominant land uses in the project area are livestock grazing/ranching, hunting, and recreation. The public lands administered by the BLM are managed for multiple-use. Impacts of the ON Line Project to BLM grazing allotments are discussed under Range Resources in **Section 4.9**. Impacts of the ON Line Project to recreation, and hunting as a form of recreation, are discussed in **Section 4.14**. While mining is not a dominant land use within the project area, there are numerous mining claims in the project area (**Section 3.3**) and impacts of the ON Line Project on these claims are discussed in **Section 4.3**.

4.12.3 Indicators and Methods

Impacts on land use caused by project construction or operation were evaluated by determining the potential for:

- Conflicts with existing federal, state, and local land uses, plans, and policies
- Conflicts with existing BLM land use authorizations
- Changes in public land disposition

4.12.4 Proposed Action

The majority of the Proposed Action would be within federally designated utility corridors (i.e., SWIP and West-wide Utility Corridors) which function to minimize environmental and land use impacts and the proliferation of ROWs. The Proposed Action transmission line facilities cross or would be adjacent to several BLM land use authorizations. These are primarily in the form of ROWs for transmission lines, roads, and telephone and fiber optic facilities and include the following large right-of-way holders: NV Energy, Idaho Power, Great Basin Transmission LLC, Nevada Bell, Lincoln County Telephone, Lincoln County Power District, BLM, and NDOT. Because transmission line spans can be modified to avoid potential impacts, no adverse effects to existing ROWs are anticipated.

Table 4.12-1 compares the long-term ROW to the amount of private land that would be affected as a result of granting the ROW for the transmission line facilities.

TABLE 4.12-1 PROPOSED ACTION LONG-TERM ROW AND PRIVATE LAND USE ACREAGE

COMPONENT	LONG-TERM BLM ROW (ACRES)	PRIVATE, STATE, OR OTHER AGENCY LANDS AFFECTED (ACRES)
Robinson Summit Substation, includes 50-foot wide access road	112	0
Falcon-Gonder Loop-in	19	0
Segment 6C	2,481	31
Segment 8	1,354	0
Segment 9A	196	0
Segment 9B	263	0
Segment 9D	469	0
Segment 11	935	0
Falcon Substation Expansion	0	7

Construction

Prior to construction, the FAA would be consulted regarding potential interference of commercial and military training air space. Proposed transmission structures and most substation facilities would range in height from 100 to 185 feet, lower than the aviation obstruction guidelines. The microwave tower at the substation would be 200 feet in height and therefore would require lighting as mandated by FAA regulations (FAA 2007; AC 70/7460-1K).

During transmission line stringing, it would be necessary to erect temporary structures over major roadways for public safety. Access beneath these structures would remain largely unrestricted, with few temporary closures or other alterations to existing transportation routes.

There would be no additional construction-related impacts to land use beyond those already noted above or presented in specific resource sections including **Sections 4.3.2** (Geology), **4.9.2** (Range), **4.14.2** (Recreation), and **4.20.2** (Transportation).

Operations, Maintenance, and Abandonment

No additional impacts to land use would occur as the result of ongoing operations and maintenance of transmission facilities.

4.12.4.1 Mitigation

Additional mitigation measures are not required.

4.12.4.2 Unavoidable Adverse Impacts on Land Use

Unavoidable adverse impacts on land use under the Proposed Action include granting ROWs for the project which would change the land use of those parcels.

4.12.4.3 Irreversible and Irretrievable Commitments of Resources

There would be no irreversible commitments of land use allocations. The loss of existing land use of the affected parcels constitutes an irretrievable commitment.

4.12.4.4 Relationship of Short-term Uses and Long-term Productivity

Most impacts on land uses in the project area would result from a long-term ROW being granted. These changes in land use are compared to the longer-term productivity of improving the regional supply of electrical power in Nevada.

4.12.5 Action Alternative

The impacts on land use would be very similar to the Proposed Action except for the different acreages listed in **Table 4.12-2,** which details the acreages of the long-term ROW and the amount of private or other agency land that would be affected as a result of the alternative.

TABLE 4.12-2 ACTION ALTERNATIVE LONG-TERM ROW AND PRIVATE LAND USE ACREAGE

ELEMENT	LONG-TERM BLM ROW (ACRES)	PRIVATE, STATE, OR OTHER AGENCY LANDS AFFECTED (ACRES)
Robinson Summit Substation, includes 50-foot wide access road	same as Proposed Action	0
Falcon-Gonder Loop-in	same as Proposed Action	0
Segment 6C	2,481	0
Segment 8	1,354	0
Sub-Alternative Segment 9A	196	0
Segment 9B	263	0
Segment 9C	160	0
Segment 9D	469	0
Sub-Alternative Segment 10	1,115	0
Segment 11	957	0
RSS-Site B Sub-Alternative, includes access roads	75	0
Falcon-Gonder Loop-in for RSS-Site B Sub-Alternative	163	0
Falcon Substation Expansion	0	same as Proposed Action

Construction

Impacts would be the same as those described under the Proposed Action and presented in specific resource sections including **Sections 4.3.2** (Geology), **4.9.2** (Range), **4.14.2** (Recreation), and **4.20.2** (Transportation).

Operations, Maintenance, and Abandonment

Impacts would be the same as those described under the Proposed Action in **Section 4.12.4.2**.

4.12.5.1 Mitigation

Additional mitigation measures are not required.

4.12.5.2 Unavoidable Adverse Impacts on Land Use

Unavoidable adverse impacts on land use under the Action Alternative include granting a ROW for the project which would change the land use of those parcels.

4.12.5.3 Irreversible and Irretrievable Commitments of Resources

The irreversible and irretrievable commitments of resources would be the same as those discussed under the Proposed Action (**Section 4.12.4.3**).

4.12.5.4 Relationship of Short-term Uses and Long-term Productivity

The relationship of short-term use and long-term productivity would be the same as that discussed under the Proposed Action (**Section 4.12.4.4**).

4.12.6 No Action Alternative

Under the No Action Alternative, existing land use plans, policies, ownership, authorizations, access, and practices would continue under the current scenario into the foreseeable future.

4.13 Special Designation Areas

4.13.1 Indicators and Methods

This section addresses impacts of the proposed project elements to SDAs from the perspective of people using these areas. Lands outside of BLM jurisdiction were identified and included in the analysis if they were within 50 miles of the project area because recognized natural resources are present on these lands and potential impacts from the project could affect these SDAs. Included are lands administered by the NPS, USFS, National Wildlife Refuge, and Nevada Department of Wildlife Conservation lands. Other Nevada state lands, such as state parks, were not included: these are covered under Recreation Resources.

The following indicators were used to determine potential impacts to SDAs:

- Number of acres of temporary and long-term disturbance in each SDA within the Direct Effects Area
- Potential changes in air quality or other air clarity evaluations that could occur within SDAs due to construction and operation activities
- Potential changes in ambient noise levels that could occur within SDAs due to construction and operation activities
- SDAs or portions of SDAs that would have elements of the Proposed Action or Action Alternative visible, and the relationship between these areas and their Visible Resource Management (VRM) classifications
- Potential changes in erosion or sedimentation rates within SDAs

The following methods were used to evaluate these criteria:

- GIS mapping was used to determine the acreage of project elements that would occur within SDA boundaries.
- Viewshed information was reviewed to determine in what SDAs ON Line Project elements would be visible. The VRM classification of BLM lands within the project area are illustrated in **Figure 3.15-1**. The VRM classification map shows how the viewscape of each SDA is currently managed: should it be kept as pristine as possible (VRM Class I) or are views of occasional man-made objects acceptable (VRM Class II and III), or is an industrial backdrop acceptable (VRM Class IV).The relationship between viewscape, VRM classification, and SDAs is discussed by ON Line Project element.
- USGS maps were reviewed to determine if SDAs within the direct effects area would be prone to erosion due to construction or operation of the ON Line Project.

As noted in **Section 3.13**, only 7 of the 62 SDAs identified within 50 miles of the ON Line Project elements are within the direct effects area. However, several other SDAs could be indirectly affected by the project. These are evaluated below.

4.13.2 Proposed Action

Seven SDAs occur within or are located immediately adjacent to the Proposed Action ROW. There are numerous additional SDAs within 50 miles of the various segments of the Proposed Action as listed and briefly described in **Section 3.13**, **Table 3.13-2**. There are no SDAs within or adjacent to the Falcon Substation expansion area.

Construction

Construction of the Proposed Action would create fugitive dust, emissions from heavy equipment and employee vehicles, areas of light if work continued after dark, and loud noises during excavation activities that could be noticeable to people utilizing SDAs. Construction would last 18-24 months, with construction crews moving through an area at the rate of one to several miles per week.

<u>Land Area</u>

The Proposed Action transmission line facilities would pass through three SDAs: Kane Springs ACEC, Arrow Canyon ACEC, and Coyote Springs ACEC. Approximately 75 miles of the Proposed Action transmission line facilities pass through these SDAs. However, the Proposed Action is within the designated SWIP Utility Corridor in these areas. The transmission line segments would also pass adjacent to four additional SDAs: the Kirch WMA, Delamar Mountains WA, Pahranagat NWR, and Desert Range NWR.

Those SDAs that would be intersected by, or are within the same watershed basin boundary as the Proposed Action, would be most likely to be affected by visual, sound, or other impacts from construction and operation activities. These are listed in **Table 4.13-1**.

TABLE 4.13-1 SDAS LOCATED IN THE SAME WATERSHED BASIN AS THE PROPOSED ACTION

SDA	SDA	SDA
Arrow Canyon ACEC	Delamar Mountains WA	Red Mountain WA
Arrow Canyon WA	Desert Range NWR	Riordan's Well WSA
Bald Mountain WA	Far South Egan WA	Shellback WA
Big Rocks WA	Grant Range WA	South Egan Range WA
Blue Eagle WSA	Kane Springs ACEC	South Pahroc WA
Bristlecone WA	Kirch WMA	Troy Peak RNA
Coyote Springs ACEC	Mormon Mesa ACEC	Weepah Spring WA
Currant Mountain RNA	Pahranagat NWR	White Pine Range WA
		White Pine Peak RNA

Visitors to those SDAs that have at least one mountain range or ridge between them and the transmission facilities would be less likely to see, hear, or be otherwise aware of these facilities. These SDAs are listed in alphabetical order in **Table 4.13-2**.

TABLE 4.13-2 SDAS WITH AT LEAST ONE MOUNTAIN RANGE BETWEEN THEM AND THE PROPOSED ACTION

SDA	SDA	SDA
Beaver Dam Slope ACEC	Moapa Valley NWR	Railroad Valley WMA
Clover Mts. WA	Mormon Mountains WA	Red Rock/Devil's Throat WA
Fortification Range WA	Mount Grafton WA	The Wall WSA
Franklin WMA	Mount Irish WA	Tunnel Spring WA
Gold Butte ACEC, Parts A&B	Muddy Mountains WA	Virgin River ACEC
Great Basin National Park	Palisade Mesa WSA	Virgin Mountains WA
Hidden Valley ACEC	Park Range WSA	White Rock WA
Highland Ridge WA	Parsnip Peak WA	White Rock WA
Lime Canyon WA	Quinn Canyon WA	

Of the SDAs listed in **Table 4.13-2**, eight are located south of I-15 or are separated from the actual facilities by other, more noticeable man-made features such as buildings and freeways. These are the Gold Butte ACECs – Parts A and B (including Gold Butte Townsite), Hidden Valley ACEC, Lime Canyon WA, Red Rock Springs/Devil's Throat ACECs, Muddy Mountains WA, Virgin River ACEC, and the Virgin Mountains ACEC. These are not discussed further in this section.

<u>Air Quality</u>

The estimated volume of fugitive dust created during the 24-month construction period of the transmission facilities is 878.5 tons. This assumes watering of the earthmoving areas for dust control. **Section 4.6** describes these effects as temporary and minor in areas directly adjacent to the work area, which includes those SDAs that are within or immediately adjacent to the electric transmission facilities.

Using wind data from the Western Regional Climate Center (WRCC 2010), prevailing winds in the project area generally blow from the south for the northern portion of the project area and from the northwest for the southernmost portion of the project area. Visitors in SDAs that are located in the opposite direction of the prevailing wind source (i.e., north or southeast) during construction activities would be more likely to experience noticeable changes in air quality from construction activities than visitors in SDAs located upwind. See Air Resources (**Section 4.6**) for specific analysis of air quality impacts. Impacts would become negligible as distance from the construction activity increased. There would be no air quality impacts to Great Basin National Park, a FLM-identified sensitive Class II area (**Section 4.6.1**).

<u>Noise</u>

Construction activities would create noise levels that would range from a maximum of 85-88 dBA within 50 feet of construction activities. This would be a maximum noise level of 50 dBA within 1 mile and 45 dBA at a distance of 1.5 miles. Helicopter noise, which would be brief and intermittent, would reach a maximum of 61 dBA at a distance of 1.5 miles. Those SDAs that are neither adjacent to, nor within, the transmission facilities would experience similar to lower noise levels as they are as far from, or farther from, the transmission facilities. Impacts of these noise levels, which would be transient in nature as construction crews move through an area, would be negligible to moderate and short term.

Those SDAs that are adjacent to, or within, the direct effects area would be subject to much louder noises. **Table 4.16-1** shows the mean and maximum decibel levels of loud equipment that is 50 feet away. The loudest noise would come from a helicopter (mean = 102 dBA, maximum = 105 dBA), which could be used only occasionally. A ground scraper, which would be much more commonly used, is typically 90 dBA (maximum = 94 dBA). This is roughly equivalent to a busy urban street. Impacts of these noises, which would be transient in nature as construction crews move through an area, would be minor to moderate and short-term. The effect of these noises to SDAs would dissipate as distance from construction activities increased.

Visitors to those SDAs that are at least one mountain range away from activities, or south of I-15, would likely not be able to hear or discern noises related to the construction activities for the electric transmission facilities.

<u>Viewsheds</u>

The Proposed Action is mostly within the SWIP Utility Corridor which is designated as VRM Class IV. The boundaries of all SDAs that are within or immediately adjacent to the Proposed Action ROW are within 8 miles of at least one of the following: existing paved roads, railroad tracks, operating or historic mines, or existing power lines. Small portions of Segment 9D, within the SWIP Utility Corridor, occur immediately adjacent to the Delamar WA. The SDAs on BLM administered lands are within Class I areas, the remaining SDAs within the direct effects area are within VRM Class III areas. Being able to see the construction activities of a narrow, linear human feature such as a power line would be a relatively insignificant addition of human activity to the viewscape and would fit within the management standards of this VRM classification. A total of 75 miles of the Proposed Action transmission line facilities pass through these SDAs. Construction of the Proposed Action would cause short-term and negligible to minor impacts to SDAs.

Visitors to those SDAs that are at least one mountain range away from activities (including developed areas of Great Basin National Park where most visitor use occurs), or south of I-15, would likely not interpret construction activities related to the Proposed Action as a major distraction from the surrounding viewscape.

<u>Light Pollution</u>

Construction would occur during daytime hours, therefore there would not be any construction lighting after dark.

<u>Erosion and Sedimentation</u>

Construction of the Proposed Action transmission line segments that pass through SDAs could create sediment that could enter ephemeral washes and/or affect the aesthetics of SDAs in the direct effects area. Three SDAs could potentially be affected by erosion and sedimentation. These are the Mormon Mesa, Kane Springs, and Coyote Springs ACECs. These effects are discussed in more detail in **Section 4.1** (Water). Sedimentation would be minimized and/or avoided through the use of BMPs (**Appendix 2A**), such as silt fencing and straw bale check dams. The effects of potential sedimentation would be negligible to minor and short-term in duration.

Operations, Maintenance, and Abandonment

The operation of the Proposed Action would have negligible impacts on SDAs because once construction was completed, exposed construction areas would be reclaimed to a vegetative

cover, minimizing fugitive dust, erosion, and air quality issues. Only infrequent activity and/or noise related to inspection and maintenance work would occur.

As discussed under Construction above, changes to the viewscape would be negligible. The power line and substations would be visible from only a few locations in the SDAs located within the direct impacts area, as well as a few others located in close proximity to the facilities. No lights would be present on the transmission structures or lines. It is likely that a few small lights would be used for safety at the Robinson Summit Substation and the existing Falcon Substation. Lighting would only be utilized during nighttime visits for emergency operations or maintenance activities. Non-emergency visits would normally occur during daytime hours. The existing Harry Allen Substation and the Falcon Substation are visible from existing highways that see traffic throughout the night. Robinson Summit Substation would be blocked from view from US-50.

Thus, operations and maintenance of the Proposed Action would cause negligible effects on SDAs. Since activities would occur intermittently throughout the life of the project and the facilities, once constructed, are anticipated to remain for a long time, impacts would be long-term in duration.

Abandonment would require dismantling of the transmission line. Impacts would be the same as those described under Construction, above.

4.13.2.1 Mitigation

Additional mitigation measures are not required.

4.13.2.2 Unavoidable Adverse Impacts on Special Designation Areas

Unavoidable adverse impacts to SDAs would occur from any permanent and unreclaimed disturbance areas created during construction activities within SDAs.

4.13.2.3 Irreversible and Irretrievable Commitments of Resources

It is not anticipated that irreversible and irretrievable commitments of resources to SDAs would occur.

4.13.2.4 Relationship of Short-term Uses and Long-term Productivity

Most impacts on SDAs would result from relatively short-term construction activities, but others (such as visual impacts) would persist for the operational life of the substations and transmission line. This is compared to the longer-term productivity of improving the regional supply of electrical power in Nevada.

4.13.3 Action Alternative

Construction

Construction of the Action Alternative would create similar impacts to those already described under the Proposed Action.

<u>Land Area</u>

Visitors to those SDAs that are within or adjacent to the Action Alternative would most likely be affected by visual, sound, or other impacts from the transmission facilities construction and/or operation. These are the same as the Proposed Action and listed in **Table 4.13-1** above.

Visitors to those SDAs that have at least one mountain range or ridge between them and the transmission facilities would be less likely to see, hear, or be otherwise aware of these facilities. These SDAs are listed in alphabetical order in **Table 4.13-3** below.

TABLE 4.13-3 SDAS WITH AT LEAST ONE MOUNTAIN RANGE BETWEEN THEM AND THE ACTION ALTERNATIVE

SDA NAME	SDA NAME	SDA NAME
Bald Mountain WA	Mount Grafton	Shellback WA
Bluebell WSA	Mount Moriah WA	South Egan Range WA
Bristlecone WA	North-South Schell Peaks RNA	South Pequop WSA
Cleve Creek Baldy RNA	Pearl Peak RNA	Steptoe Valley WMA
Franklin WMA	Red Mountain WA	White Pine Range WA
Goshute Peak WSA	Ruby Lake NWR	Meadow Valley Range WA
Government Peak	Ruby Mountain WA	
Great Basin National Park	Seitz Canyon/Echo Lake RNA	

Air Quality

The estimated volume of fugitive dust created during the 24-month construction period of the entire electric transmission facilities is 878.5 tons.

Noise

Changes in noise levels would be similar to those described under the Proposed Action, **Section 4.13.2**.

Viewshed

Viewshed impacts would be similar to that described under the Proposed Action.

Light Pollution

Impacts would be similar to those described for the Proposed Action.

Erosion and Sedimentation

Impacts to SDAs from erosion and sedimentation during construction activities would be the same as described in **Section 4.13.2**.

Operations, Maintenance, and Abandonment

The effects from operation of the transmission facilities would be the same as that described in **Section 4.13.2**.

4.13.3.1 Mitigation

Additional mitigation measures are not required.

4.13.3.2 Unavoidable Adverse Impacts on Special Designations

Unavoidable adverse impacts caused by construction and operation of the ON Line Project using the Action Alternative would be similar to those described under **Section 4.13.2.2**.

4.13.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources using the Action Alternative would be similar to those described under **Section 4.13.2.3**.

4.13.3.4 Relationship of Short-term Uses and Long-term Productivity

The relationship of short-term uses and long-term productivity would be similar to those described in **Section 4.13.2.4**.

4.13.4 No Action Alternative

Under the No Action Alternative there would be no air emissions as a result of the construction activities or operation related to the Proposed Action or Action Alternative. There would be no potential impacts to flora, fauna, and water quality in SDAs related to this project. There would be no increased noise due to ON Line Project construction and operation.

4.14 Recreation

4.14.1 Indicators and Methods

Impacts on recreation areas and uses caused by project construction or operation were evaluated by determining the potential for:

- Conflicts with existing federal, state, and local recreation management plans and policies
- Changes in access to existing recreation areas or sites
- Changes in levels of use of existing recreation areas or sites

4.14.2 Proposed Action

The Proposed Action would not conflict with existing BLM RMPs across the project area. Management objectives related to recreation would remain viable and implementable. The 2004 Nevada SCORP identified the desire to protect, maintain, and increase public access to public lands as the top recreation management priority for the State of Nevada. The Robinson Summit Substation site would restrict public access to approximately 108 acres. None of the other proposed project elements would significantly affect public access to public lands. **Section 3.14.3.1** details all of the existing recreation management plans that are associated with the project area. There would be no conflicts with existing county land use or recreation management plans and policies.

Construction

The transmission line facilities would be constructed on lands within the Loneliest Highway, Chief Mountain, and North Delamar SRMAs. Of the 661,892 acres in the Loneliest Highway SRMA, Segment 6C would affect much less than 1 percent (about 250 acres) of the SRMA. The Robinson Summit Substation would affect an additional 153 acres of the Loneliest Highway SRMA. Electric transmission lines would also be constructed within the Ely, Caliente, and Pioche SRP Areas. Of the 218,048 acres in the Ely SRP, Segment 6C would affect less than 1 percent (730 acres) of the SRP. Segment 6C would also affect 51 acres of the Pioche SRP's 418,968 total acres. Construction could be scheduled to avoid interruption of or conflict with permitted activities (motorized races, for example). As BLM lands are managed for multiple use and multiple resource values, higher priorities or other management concerns may render

altering construction schedules impractical. Short-term impacts to permitted recreation activities could range from negligible to major.

There are no developed recreation sites within the proposed short-term or long-term ROWs for transmission facilities. Segment 6C does pass along the western boundary of the Chief Mountain OHV Area and Segment 8 would intersect the Silver State OHV Trail System in at least four places in Lincoln County. The quality of dispersed recreation adjacent to the ROW could be adversely affected by visual disruption (**Section 4.15**), noise (**Section 4.16**), fugitive dust (**Section 4.6**), and increased traffic (**Section 4.20**), though this recreation use is more conducive to this type of disturbance than most dispersed recreation uses.

Segments 6C and 9D would be near the Kirch WMA and Pahranagat NWR, respectively. Segments 9D and 11 would be adjacent to the Desert National Wildlife Refuge. Construction of the transmission line facilities may temporarily affect the presence of watchable wildlife adjacent to the ROW and along the eastern boundary of the refuge.

Recreation trails that intersect the ROW would be affected by vegetation removal within the ROW and the possibility of short-term trail closure due to construction activities.

The upgrading and use of existing access roads and the construction of new access roads would change the physical setting and may temporarily limit public access to active areas of transmission line construction for dispersed recreation purposes. The presence of equipment and areas of linear disturbance would introduce elements into the landscape that may temporarily alter recreation use patterns, especially OHVs. Transmission line facilities construction would cause temporary, minor impacts to dispersed recreation.

Operations, Maintenance, and Abandonment

Operation and maintenance activities for transmission facilities would cause long-term negligible to minor impacts to recreation activities adjacent to the ROW. Vegetation management would require the selective removal of some trees within the long-term ROW. This activity may require occasional mechanical thinning within the ROW, temporarily limiting access and introducing noise and odors that may impact the recreation experience for users in the area.

Transmission line structures would increase raptor perch sites. This would increase the possibility of raptor presence and its role as watchable wildlife, and conversely could decrease other watchable wildlife species due to increased predation. The presence of structures would also change the physical setting and introduce a visual intrusion that could affect the recreation experience for dispersed recreation users.

The presence of improved access roads to the ROWs may increase dispersed recreation (e.g., OHV) use and increase resource degradation of previously unused or little used areas. This could also increase access within the Chief Mountain OHV Area.

4.14.2.1 Mitigation

Construction schedules will be coordinated with permitted recreation activities to avoid conflicts.

4.14.2.2 Unavoidable Adverse Impacts on Recreation

The granting of 112 acres of long-term ROW for the Robinson Summit Substation (including the associated access road) and the location of the structures within the 200-foot wide short-term ROW for the transmission line facilities would remove a small portion of these lands from public access and dispersed recreation opportunities.

4.14.2.3 Irreversible and Irretrievable Commitments of Resources

The loss of dispersed recreation use at the Robinson Summit Substation constitutes irreversible and irretrievable commitments of recreation resources.

4.14.2.4 Relationship of Short-term Uses and Long-term Productivity

Most impacts on recreation resources would result from relatively short-term construction activities, but others (such as visual or visibility impacts) would persist for the operational life of the ON Line Project. This is compared to the longer-term productivity of improving the regional supply of electrical power in Nevada.

4.14.3 Action Alternative

Construction

The impacts associated with the construction of the Action Alternative would be similar to those described for the Proposed Action in **Section 4.14.2**, with the following exceptions.

Segment 8 of the Action Alternative would affect 245 acres of the Chief Mountain SRMA's 111,182 total acres. Segment 8 of the Action Alternative would affect 152 acres of the Caliente SRP's 438,151 total acres.

The Segment 10 sub-alternative would affect 242 acres of the North Delamar SRMA's 202,892 total acres.

The RSS-Site B sub-alternative, including the associated access road and Falcon-Gonder loop-in, would result in approximately 150 acres of the ROW being situated within the Loneliest Highway SRMA.

Operations, Maintenance, and Abandonment

The impacts associated with the operation and maintenance of the Action Alternative would be similar to those described for the Proposed Action in **Section 4.14.2**.

4.14.3.1 Mitigation

Construction schedules will be coordinated with permitted recreation activities to avoid conflicts.

4.14.3.2 Unavoidable Adverse Impacts on Recreation

Unavoidable adverse impacts caused by construction and operation of the ON Line Project using the Action Alternative would be similar to those described under **Section 4.14.2.2**, above.

4.14.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources using the Action Alternative would be similar to those described under **Section 4.14.2.3**, above.

4.14.3.4 Relationship of Short-term Uses and Long-term Productivity

These are the same as those discussed under the Proposed Action in **Section 4.14.2.4**.

4.14.4 No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed. This would result in no change to any existing recreational land use or access in the project area.

4.15 Visual Resources

This section discusses potential impacts of the Proposed Action and Action Alternative on visual resources, and consistency with VRM objectives.

4.15.1 Indicators and Methods

The following indicators were considered when analyzing potential impacts to visual resources:

- Level of contrast with established BLM VRM classes
- Visible project elements from surrounding sensitive areas
- Change in scenery, from baseline to projected, from various public and occupied points within the project area
- Line of sight of night-lighted project elements from surrounding sensitive areas

The assessment of visual impacts is based on impact criteria and methodology described in the BLM Visual Contrast Rating System (BLM 1986a). The quality of the visual environment is defined by VRM classes. Two issues are addressed in determining impacts: (1) the type and extent of actual physical contrast resulting from a proposed action, and (2) the level of visibility of a facility, activity, or structure. Impacts are considered to be major if visual contrasts that result from landscape modifications affect the quality of: scenic resources having rare or unique values; views from, or the visual setting of, designated or planned parks, wilderness areas, natural areas, or other visually sensitive land uses; views from, or the visual setting of, travel routes; and/or views from, or the visual setting of, established, designated, or planned recreational, educational, or scientific facilities, use areas, activities, viewpoints, or vistas.

The extent to which the project would affect the visual quality of its viewshed depends on the degree of visual contrast between proposed facilities and existing landscape elements (form, line, color, texture) and features (land and water surface, vegetation, structures). Assessing the ON Line project's contrast in this manner indicates the magnitude of potential impacts and allows for development of mitigation measures that fulfill VRM objectives.

4.15.2 Proposed Action

Appendix 4A contains Visual Contrast Rating Worksheets that were prepared based on field examination of the visual settings of each KOP. The worksheets describe the existing conditions of the characteristic landscape seen from each KOP, types of viewers, sensitivity of viewers, and other relevant information. As described in **Section 3.15.3.1**, VRM Classes have been assigned by the BLM to all the KOPs and will be used as a basis to determine the level of contrast. Described below are potential visual impacts of project elements on the landscape when viewed from the KOPs.

Construction

Construction of transmission facilities would begin with surveying and soil testing followed by identification of structure locations, material yards, staging areas, wire stringing and tensioning sites, and concrete batch plant sites. Equipment access would be required to every transmission structure. New roads would be constructed if necessary; existing access roads would be used where possible. As viewed from KOPs, most of the ground disturbance would be hidden by existing vegetation. Equipment and workers would be most visible when working near major roads. As structures are completed and conductors are strung, the impact of transmission facilities on visual resources would increase from minimal to the final impact associated with the

operational configuration. The Robinson Summit Substation worksite is not anticipated to be visible from KOPs. The construction period is estimated to be approximately 24 months. Dust control BMPs would minimize the potential impact on visibility during construction.

Operations, Maintenance, and Abandonment

There would be industrial type lighting at the Robinson Summit Substation. Generally, lights would be off at all times unless an employee is in the substation. The floodlights would be directed downward or toward specific equipment. The microwave tower at the substation would be 200 feet in height; therefore it would need to be lighted to FAA standards both day and night. Exterior lighting at the substations would contribute to degradation of night skies to some degree; however, the BMPs presented in **Appendix 2A** would minimize the impact.

The transmission line facilities would be supported by tubular steel guyed-V or H-frame, self-supporting lattice, or guyed-V lattice structures, ranging from 100 to 185 feet high and spaced 900 to 1,600 feet apart, depending on terrain. The single-circuit transmission line would connect the proposed Robinson Summit Substation to the existing Harry Allen Substation. Under the Proposed Action, the transmission line would be visible from KOPs 1 through 6. The proposed transmission line would meet VRM management objectives when viewed from these KOPs, as discussed below.

The Proposed Action is located generally within the designated SWIP Utility Corridor which is designated VRM Class IV. Segment 11 would pass within approximately 0.5 mile of the Meadow Valley Range WA, and within approximately 0.25 mile of the Arrow Canyon WA, both of which are designated VRM Class I. The transmission line would likely be visible and could attract the attention of observers in these WAs. As discussed in **Section 4.15.2.1**, the fact that non-wilderness activities or uses can be seen or heard from Wilderness Areas does not preclude the conduct of those activities outside Wilderness Area boundaries.

The southern end of Segment 6C would pass through a portion of the south Schell Creek Range north of Silver King Mountain, that is designated VRM Class II. Viewers close to the transmission line on the Silver State OHV Trail (within 1 mile) would notice the line, but given the nature of their activity would not likely have their attention unduly attracted. The noticeability of the line to viewers would diminish with distance, as it would increasingly blend with the background landscape. VRM II objectives for this area would be met.

The Robinson Summit Substation would be southwest of US-50 and would be hidden by rolling hills, therefore a KOP in this area was deemed unnecessary. Segment 6C would be south of the highway. The closest support structures would be at least 400 feet from the highway. The contrasting vertical lines and color of the support structures would be hidden to some degree by the rolling hills. The transmission line would attract attention, but would not dominate the view because it would be visible from vehicles on the highway for approximately 0.5 mile. The management objectives for VRM Class III and IV would therefore be met.

At KOP 1 Segment 6C crosses US-6. The support structures of the transmission line would be noticeable from approaching vehicles, and would attract attention for some distance on either side of the crossing. The closest support structures would be approximately 600 feet from the highway. The contrast between the transmission line support structures and the flat expanse and uniform color of shrubland in the valley would tend to change the existing character of the landscape, but only in the immediate vicinity of the crossing. As viewed from vehicles on the highway, the effect would be transient and management objectives for the VRM Class IV SWIP Utility Corridor would be met. A photo simulation of the view to the northwest from KOP 1 is presented in **Figure 4.15-1**. This figure shows a simulation of the Proposed Action line on the

left hand side of the figure and a simulation of the Action Alternative line on the right hand side of the figure.

Figure 4.15-1 View to the Northwest from KOP 1, Segment 6C

KOP 2 is in east Dry Lake Valley at the point where Segment 8 would cross US-93. An existing transmission line, access road, and equipment building at this location have degraded the scenic quality of the view. The support structures of the new transmission line would be noticeable from approaching vehicles, and would attract attention for some distance on either side of the crossing. The contrast between the new, lighter colored, vertical support structures and the flat expanse of shrubland in the valley would tend to change the existing character of the landscape in the immediate vicinity of the crossing. As viewed from vehicles on the highway, the effect would be transient and management objectives for the VRM Class IV SWIP Utility Corridor would be met. A photo simulation of the view to the northeast from KOP 2 is presented in **Figure 4.15-2**. This figure shows a simulation of the Proposed Action line on the left hand side of the figure in the distant and a simulation of the Action Alternative line, more prominent, on the right hand side of the figure.

Figure 4.15-3 shows the same view with guyed-V support structures instead of self-supporting lattice structures.

Figure 4.15-2 View to the Northeast from KOP 2, Segment 8

Figure 4.15-3 View to the Northeast from KOP 2, Segment 8, Guyed-V Structures

KOP 3 is on US-93 just south of the Pahranagat NWR at the point where Segment 9D would cross the highway. The vertical structures of the proposed transmission line would contrast with the relatively undisturbed valley and hills, and would tend to attract attention from the highway. However, the nearest support structure would be approximately 600 feet away and at highway speeds, the transmission line would be visible for less than a minute. The objectives for VRM Class IV in the SWIP Utility Corridor would be met.

KOP 5 is located on US-93 west of the Meadow Valley Mountains where Segment 11 would follow the highway. The new transmission line would be a minimum distance of 0.25 mile west of the highway, and therefore less conspicuous than the existing H-frame transmission line. The transmission line would be within the SWIP Utility Corridor and VRM Class IV objectives at KOP 5 would be met. A photo simulation of the view from KOP 5 is presented in **Figure 4.15-4**. This figure shows a simulation of the Proposed Action line which is the farthest line on the left hand side of the figure and a simulation of the Action Alternative line, which is the lattice structure line left of the existing wooden pole line.

Figure 4.15-4 View to the North from KOP 5, Segment 11

KOP 6 is located at the junction of US-93 and I-15. The Harry Allen Substation is approximately 3.5 miles away and Segment 11 would enter the switching station from the far side (i.e., from the northwest). Although a large number of observers view the valley floor from this location, the proposed facilities are far enough away that they would be inconspicuous if they were visible at all. The view from KOP 6 is already affected by dozens of transmission line support structures on the valley floor. Therefore, VRM Class IV objectives would be met.

Following abandonment, removal of support structures and switching stations, and reclamation of access roads, the visual contrast would be greatly reduced and management objectives would be met for VRM Class III and IV land when viewed from KOPs 1 through 3, 5, and 6.

4.15.2.1 Mitigation

Additional mitigation measures are not required.

4.15.2.2 Unavoidable Adverse Impacts on Visual Resources

During the construction period, unavoidable adverse impacts to visual resources include the presence of construction equipment and personnel, and possible fugitive dust emissions from disturbed areas that could affect visibility. During the operational phase, the transmission line support structures would be visible from major road crossings and potentially from adjacent Wilderness Areas.

4.15.2.3 Irreversible and Irretrievable Commitments of Resources

The Proposed Action would have no irreversible effects on visual resources because it would be possible to remove any of the proposed structures/substation equipment and reclaim disturbed vegetation. There would be an irretrievable commitment of visual resources during the active life of the project as a result of the intrusion of project elements into the existing landscape. As described in **Chapter 2**, transmission facilities would be used for the foreseeable future and removed only if no longer needed.

4.15.2.4 Relationship of Short-term Uses and Long-term Productivity

There are no known short-term uses of visual resources that would adversely affect the maintenance and enhancement of long-term productivity.

4.15.3 Action Alternative

Construction

Potential effects on visual resources during construction of the Action Alternative would be essentially the same as those discussed for the Proposed Action. **Figures 4.15-1** through **4.15-4** all provide simulations of the Action Alternative.

The RSS-Site B sub-alternative would be visible from US-50; therefore three KOPs (KOP 7-9) were evaluated as presented in **Section 3.15**.

Construction at the RSS-Site B would result in increased traffic and heavy equipment on Jake's Valley Road, which runs perpendicular to US-50. Travelers on US-50 at KOPs 7 and 8 would likely see dust from the vehicles and equipment on Jake's Valley Road, as well as dust columns/clouds at the actual site. Travelers on Jake's Valley Road would likely encounter construction-related vehicles and equipment. Dust, ground disturbance, and increased levels of activity would be visible in the landscape and may attract attention from any of the KOPs, but would not dominate the view. Class III objectives would be met during construction.

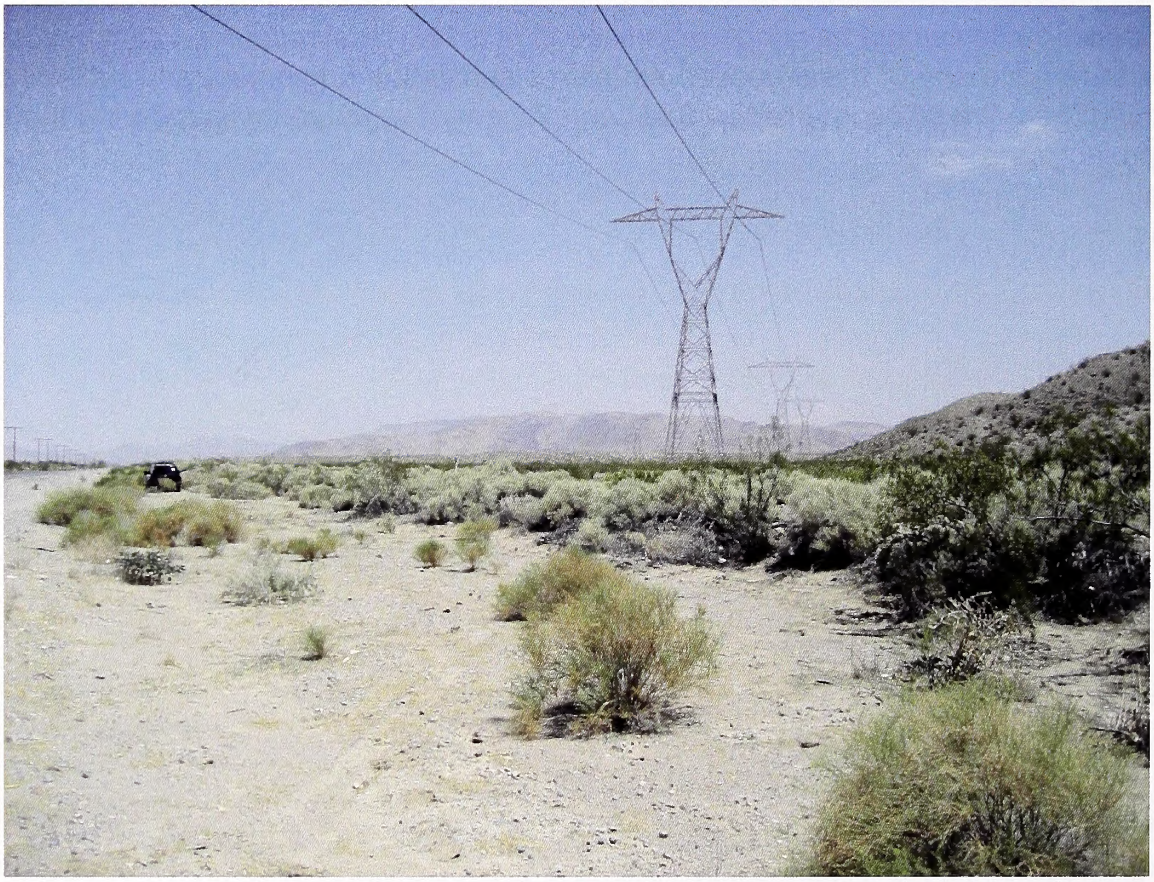
Operations, Maintenance, and Abandonment

KOP 4 is located along US-93 near Kane Springs Valley Road where the Segment 10 sub-alternative would approach the highway and the transmission line from the east. The proposed transmission line support structures would contrast with the flat terrain and uniformly-colored vegetation in the existing, relatively undisturbed landscape east of the highway. The hills on the south would help hide the transmission line. In the vicinity of the crossing, the transmission line would tend to attract attention from vehicles on the highway, but it would not dominate the view because, at highway speeds, it would be visible for less than a minute or two. The objectives for

both VRM Class III and IV would be met. A photo simulation of the view from KOP 4 is presented in **Figure 4.15-5**.

Potential effects from the transmission line would be essentially the same as under the Proposed Action. An approximately 0.7-mile length of Segment 9C would be outside, but adjacent to the western edge of the Delamar Mountains WA, which is designated VRM Class I. Segment 9C is within the designated SWIP Utility Corridor which is designated VRM Class IV. Segment 10 (sub-alternative) would cross the Delamar Mountains, which is designated VRM Class II. Because of the adjacent visually sensitive wilderness areas, the attention of viewers within 3 to 5 miles (i.e., the foreground-middleground) would likely be attracted by the transmission line and management objectives would therefore not be met.

Figure 4.15-5 View to the North from KOP 4, Segment 10 Sub-Alternative



The RSS-Site B sub-alternative would be in the northeast portion of Jakes Valley which is designated as VRM Class III. From all three KOPs (KOP 7, 8, and 9) the landscape is characterized by expansive views and strong horizontal elements. **Figure 4.15-6** simulates the substation in the landscape from KOP 7. The substation would appear rectangular and flat gray at a distance, composed of numerous components that would add vertical lines and a human element to the open, undeveloped landscape. However, the distance of the proposed substation from the KOPs would result in the substation being a relatively small component of the landscape, and would limit the impact of the substation on the view. The substation would be visible in the landscape. The flashing light on top of the 200-foot tall microwave tower would attract attention of the casual viewers passing by the KOPs to the substation, but the substation

would not dominate the view. Class III management objectives would be met for KOPs 7, 8, and 9.

An 8-foot high fence would be constructed around the RSS-Site B sub-alternative site, which would include colored slats using a color from the standard color chart (possibly beetle) to reduce the visual effect of the substation in the landscape.

Figure 4.15-6 View to the East from KOP 7, RSS-Site B Sub-Alternative

4.15.3.1 Mitigation

Additional mitigation measures are not required.

4.15.3.2 Unavoidable Adverse Impacts on Visual Resources

Unavoidable adverse impacts for the Action Alternative would be the same as those discussed in **Section 4.15.2.2**.

4.15.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources for the Action Alternative would be the same as those discussed in **Section 4.15.2.3**.

4.15.3.4 Relationship of Short-term Uses and Long-term Productivity

The relationship of short-term uses and long-term productivity for the Action Alternative would be the same as those discussed in **Section 4.15.2.4**.

4.15.4 No Action Alternative

There would be no effect on visual resources from the No Action Alternative.

4.16 Noise

4.16.1 Indicators and Methods

The volume of sound is measured in decibels (dB), a logarithmic scale. It is difficult to hear certain sound frequencies as one is exposed to louder and louder noise. When the sound intensity is adjusted for sound frequency, the loudness is measured as the A-weighted noise level, or dBA (Etzel et al. 1997). The one-hour average noise level (dBA L_{eq} (1 hour)) is often used to characterize ongoing operations or longer-term impact analyses; the maximum dBA level (dBA L_{max}) is used to document the highest intensity, short-term noise level. Another commonly used measure of noise impacts is L_{dn}, which takes into account the time of day noise is created. During the day, the L_{dn} is equivalent to the L_{eq} value for noise, but at night, between 10 PM and 7 AM, the L_{dn} value is increased by 10 dB over the L_{eq} value to account for people's and animals' increased sensitivity to noise.

Neither Nevada nor the counties that the ON Line Project would affect have regulations quantitatively limiting noise generation or impacts from the proposed project during the construction or operational phases. The EPA has prepared a Model Community Noise Control Ordinance to provide guidance for local communities or jurisdictions to design noise control regulations (EPA no date). One of the more commonly used applications of the EPA noise control guidelines is the recommendation that noise levels should be limited to 55 dBA L_{dn} for a daily and hourly average, allowing for higher impacts for shorter term averaging periods, with a maximum noise impact of 75 dBA L_{dn} at any time in residential areas. For this analysis, application of the EPA noise control ordinance guidelines were used as a guide for assessing impacts at the nearest home, ranch, business, or identified receptor, and all identified sensitive receptors.

For the purposes of the noise impact analysis, the following qualitative terms describe the potential impact levels associated with the alternatives:

Major – Noise impacts in residential areas would exceed the thresholds set for residential areas in the commonly implemented version of the EPA Model Community Noise Control Ordinance of:

- 75 dBA L_{dn} instantaneously
- 65 dBA for 15 minute average
- 55 dBA L_{dn} for one hour or 24 hour average

Moderate – Noise impact would represent a noticeable increase over background levels that could approach but not reach the major noise impact threshold.

Minor – Noise impacts could be higher than current background noise levels, but would not approach the major noise impact thresholds on any timeframe.

Negligible – Noise impacts would be at or lower than background noise levels and therefore indistinguishable from typical background noise.

For all project-related construction activity, the nearest sensitive receptor is identified, and impacts to that and other potential receptors have been assessed.

The duration of construction activity at any particular site is generally expected to be brief, measured in weeks to months, except in staging areas and the substations

construction/expansion. Along the linear construction lines, a qualitative assessment of impact to sensitive receptors and duration of that impact was completed.

For larger support structures, estimates of noise generation are described, and qualitatively described or roughly quantified, and assessments of potential impacts to sensitive receptors are provided.

Construction staging areas would be placed on land previously used for industrial purposes generally no closer than 500 feet of residences. The schedule for all project construction activity precludes the use of heavy equipment, including those with the largest construction noise producing capability, between 10 PM and 7 AM. Therefore, during construction the day/night weighted noise impacts (L_{dn}) which gives higher value to noise generated during the evening and night when the public is more sensitive, would equal the L_{eq} average noise impact.

The unit of sound level measurement (i.e., volume) is the decibel (dB), expressed as dBA (A-weighted decibel). The A-weighted decibel measure is used to evaluate ambient noise levels and common noise sources. Sound measurements in dBA give greater emphasis to sound at the mid- and high- frequency levels, which are more discernible to humans. The decibel is a logarithmic measurement; thus, the sound energy increases by a factor of 10 for every 10 dBA increase. A 3 dBA change in noise levels is considered barely perceptible, while a 5 dBA change is typically perceptible to most people.

4.16.2 Proposed Action

Construction

NV Energy has identified the equipment anticipated to be used to construct the proposed transmission project. Estimates of noise levels from the equipment anticipated to be used were prepared consistent with guidance from the Federal Highway Administration's Construction Handbook (FHWA 2006). Equipment routinely used, including compressors, bulldozers, and cranes, would generate noise levels up to a maximum of 85 – 88 dBA within 50 feet of their location during operation. Multiple pieces of equipment operating simultaneously are assumed to have a maximum cumulative noise impact of 90 dBA at 50 feet. Two operations, the use of helicopters to set structures and string wire for the linear component, and potential intermittent blasting to support construction, would generate higher sound levels. **Table 4.16-1** documents the equipment anticipated to be used during construction of the project that would generate the highest sound levels. All equipment generating sound levels of 90 dBA or more within 50 feet is expected to be used intermittently. Helicopters are proposed only along the transmission line alignments, not at the substations.

TABLE 4.16-1 HIGHER VOLUME CONSTRUCTION EQUIPMENT NOISE SOURCES

NOISE SOURCE	MEAN NOISE LEVEL AT 50'	MAXIMUM NOISE LEVEL AT 50'
Helicopter	102 dBA	105 dBA
Blasting	94 dBA	N/A
Ground Scraper	94 dBA	94 dBA
Concrete Saw	94 dBA	94 dBA
Pneumatic tools	85 dBA	85 dBA
Bulldozer	82 dBA	85 dBA
Heavy Truck	82 dBA	85 dBA
Concrete Truck	79 dBA	85 dBA
Crane	81 dBA	85 dBA
Ground compactor	80 dBA	83 dBA

Source: Federal Highway Administration Construction Noise Handbook (FHA 2006).

Noise levels were predicted for two construction scenarios: with traditional equipment operating at maximum levels during construction, and when the louder equipment identified in **Table 4.16-1** was in use. Given the physical and geographic characteristics of the basin and range terrain of the project area, natural attenuation of sound was conservatively estimated to be below the average expected.

Construction activity associated with this project would involve work at one existing and one new substation, and building transmission line facilities from the proposed new substation at Robinson Summit south to the Harry Allen Substation.

Maximum construction noise impacts would be 50 dBA within 1 mile and 45 dBA at 1.5 miles with the earth moving and construction equipment anticipated to be used. When helicopters are used occasionally, their noise levels could briefly reach up to 61 dBA within 1.5 miles. Construction noise impacts would be temporary and of short duration at any given location. The magnitude would be minor at all locations 1.5 miles from the transmission line facilities during construction and potentially moderate during the brief construction period in closer proximity. Moderate noise impacts during construction would extend approximately 3.5 miles from the location of activity when helicopters are in use.

There are no residences close enough to Robinson Summit to anticipate construction noise impacts above background levels during construction. If helicopters are used, no sensitive receptor would be expected to be subjected to noise levels over 40 dBA for any significant duration. From Robinson Summit south to the Harry Allen Substation, the only residences or areas of regular human activity within 3 miles of the SWIP Utility Corridor route would be an isolated ranch or two north of Alamo, the Coyote Springs residential and commercial development where Segment 9D meets Segment 10, and the Moapa Indian Reservation within 2 miles, with the nearest residence within 3 miles along Segment 11. Construction impacts at those locations would be temporary and minor, potentially briefly moderate, at the nearest Coyote Springs lots.

Operations, Maintenance, and Abandonment

Noise generation during the operational phase along the transmission line would be expected to be negligible and not significant compared to background levels. Sound generation would be slightly higher at the substations, but because there are no areas of regular human use near those substations the noise would not be sufficient to cause more than negligible to minor human impacts. Maintenance efforts would be intermittent, and would have impacts similar to

those described for construction though generally of lower magnitude, depending on the type of equipment used.

4.16.2.1 Mitigation

Construction staging areas will be placed no closer than 500 feet of residences. The schedule for all project construction activity will preclude the use of heavy equipment, including those with the largest construction noise producing capability, between 10 PM and 7 AM within 2 miles of sensitive receptors.

4.16.2.2 Unavoidable Adverse Impacts from Noise

While project components are being built, traditional construction and ground moving equipment would be utilized. Other louder equipment would occasionally be required, as mentioned in the discussion for project component construction impacts. Project noise from construction would be an unavoidable, temporary adverse impact.

4.16.2.3 Irreversible and Irretrievable Commitments of Resources

There would be no irreversible and irretrievable commitment of resources due to noise impacts.

4.16.2.4 Relationship of Short-term Uses and Long-term Productivity

There would be no effects on long-term productivity of resources due to short-term noise impacts.

4.16.3 Action Alternative

Construction

The Action Alternative would result in the same types of impacts described above, along a slightly different linear route, generally located approximately 1,800 feet east of the Proposed Action route. As previously described, the Action Alternative route would be situated within the SWIP Utility Corridor, or with potential deviations described as Segment 10 (sub-alternative) or Segment 9A (sub-alternative). Also, the Action Alternative could include the RSS-Site B sub-alternative. There would be little if any difference in sound generation under any of the alternatives. None of the alternatives would bring project activities in any significantly closer proximity to areas of regular human activity, nor would any alternative result in any appreciable difference in project noise impacts.

Operations, Maintenance, and Abandonment

The impacts during operations, maintenance, and abandonment would be similar to those described under the Proposed Action.

4.16.3.1 Mitigation

Mitigation would be the same as that described under the Proposed Action.

4.16.3.2 Unavoidable Adverse Impacts from Noise

While project components are being built, traditional construction and ground moving equipment would be utilized. Other louder equipment would occasionally be required, as mentioned in the discussion for project component construction impacts. Project noise from construction would be an unavoidable, temporary adverse impact.

4.16.3.3 Irreversible and Irretrievable Commitments of Resources

There would be no irreversible and irretrievable commitment of resources due to noise impacts.

4.16.3.4 Relationship of Short-term Uses and Long-term Productivity

There would be no effects on long-term productivity of resources due to short-term noise impacts.

4.16.4 No Action Alternative

The No Action Alternative would result in no construction, so there would be no noise-related construction or operational impacts associated with the Proposed Action. Alternative uses of the lands proposed for improvements not foreseeable at this time could possibly result in their own noise impacts.

4.17 Socioeconomics

Construction and operation of the ON Line Project would result in economic benefits for both White Pine and Lincoln counties. Wages and employment would temporarily increase in the area, and both counties would experience a major, but temporary increase in sales tax revenue during the construction phase. NV Energy is centrally assessed for property taxes (taxes spread to counties based on location of all utility property). NV Energy has little other utility property in either White Pine or Lincoln counties; therefore, the impact on property tax revenue in both counties would be long-term but minor. The construction phase of the ON Line Project would create a short-term, temporary, and minor population increase in the area. Because of the transitory nature of this type of construction, few, if any of the transient construction workers would be traveling with families.

Most of the construction workers would stay in various communities in the affected area. Crews building the Robinson Summit Substation would live in White Pine County while crews building the transmission line facilities from Robinson Summit south to the Harry Allen Substation in Clark County would live in White Pine, Lincoln, and Clark counties. Crews constructing the Falcon Substation expansion would live in Eureka or Elko counties.

When construction is complete, the ON Line Project would be self-sufficient and would not require any additional workforce for its operation and maintenance.

This economic analysis was prepared with information available in late 2007. Economic conditions in the affected area are not static and may change over time from what is described herein. Descriptions and costs for the project may also change over time in a way that is not reflected in this analysis.

4.17.1 Indicators and Methods

Social and economic impacts for the ON Line Project were evaluated in depth for the Lincoln and White Pine counties in Nevada. Although the transmission line would be constructed in Clark and Nye counties, the economy of Clark County is more robust than the economies of Lincoln, Nye and White Pine counties, and construction of the transmission line in Clark and Nye counties and the Falcon Substation expansion in Eureka County would be so brief and minor in impact that in-depth analysis of the socioeconomic impacts of the project on Clark, Eureka, and Nye counties is unwarranted in this document. In fact, the economy of Clark County is so much larger than that of White Pine County (for example) that adding Clark County to the in-depth analysis may have the effect of trivializing the impacts to the Lincoln/White Pine county area. **Table 4.17-1** shows personal income by county for the two-county area and the state, and demonstrates that a project that may have a negligible effect on Clark County might have a major impact in White Pine or Lincoln County.

TABLE 4.17-1 PERSONAL INCOME TOTALS FOR TWO COUNTIES AND THE STATE OF NEVADA FOR 2005

REGION	PERSONAL INCOME FOR 2005
Lincoln County, NV	$100,053,000
White Pine County, NV	$291,403,000
State of Nevada	$86,224,092,00

Source: U.S. Bureau of Economic Analysis, 2007a

In addition to the direct employment and wages associated with construction of the ON Line Project, there would be indirect employment and wages that result from spending by NV Energy and its contractors in the area.

The RIMS II Input-Output model, developed by the U.S. Bureau of Economic Analysis (Bureau of Economic Analysis 2007b), was used to determine the indirect and induced economic impacts of the ON Line Project on Lincoln and White Pine counties. Modeling was conducted by economists at the Utah Bureau of Economic and Business Research and reported in a technical report (Crispin and Isaacson 2008).

The economic impacts described in this section were calculated in fall of 2007 with initial fiscal and employment estimates provided by NV Energy in summer and fall of 2007. Updated information was provided by NV Energy in spring of 2009.

4.17.2 Proposed Action

Tables showing employment, wages, and fiscal impacts during construction are shown here to provide a more complete overview of the primary social and economic impacts that the project would generate. These tables will then be referenced as appropriate in subsequent sections. Due to uncertainties in scheduling the actual construction of the proposed project, the tables use Year 1 and Year 2, etc. instead of calendar years.

Table 4.17-2 presents the total estimated direct, indirect, and induced employment and earnings that would be generated in Lincoln and White Pine counties during construction of the ON Line Project. The direct construction workforce is projected to be 221 in Year 1 and 226 in Year 2. Additionally, there would be indirect and induced employment during the construction phase. The indirect and induced employment generated by local spending would average 281 in Year 1 and 451 in Year 2.

When construction was complete, the project would be self-sufficient and would not require any additional workforce for its operation or maintenance. Therefore, when the ON Line Project is put into service, there would be no continued long-term benefit to, or growth in the local economies of Lincoln and White Pine counties that would be generated by the project.

TABLE 4.17-2 ECONOMIC IMPACT OF THE ON LINE PROJECT

	MULTIPLIER	YEAR 1	YEAR 2
Annual Average Employment		221	226
Total Wages Paid, $1,000		$63,724.8	$64,882.4
Gravel, $1,000		$791.2	$2,186.7
Ready-Mix-Concrete, $1,000		$9,494,9	$26,240.5
Total Mineral Product Manufacturing, $1,000		$10,286.1	$28,427.2
Employment	9.012	85	235
Earnings, $1,000	0.3874	$3,984.8	$11,012.0
Gasoline, Diesel fuel, lubricants, $1,000		$1,582.5	$4,373.4
Lumber, paint, other similar, $1,000		$63.3	$174.9
Total Retail, $1,000		$1,645.8	$4,548.4
Retail at 33% trade margin, $1,000	33%	$543.1	$1,501.0
Employment	18.5494	9	26
Earnings, $1,000	0.4783	$260.0	$717.6
Local Spending of Wages, 50% of wages	50%	$31,862.4	$32,441.2
Employment	7.3859	187	190
Earnings, $1,000	0.2221	$6107.9	$6,218.9
Total Indirect & Induced Employment		281	451
Total Indirect & Induced Earnings, $1,000		$10,352.7	$17,948.5
Total Employment		502	676
Total Earnings, $1,000		$74,077.5	$82,830.9

Source: Crispin and Isaacson 2008

Note: The Earnings Multiplier represents the total dollar change in earnings of households employed by all industries for each additional dollar of output delivered to final demand by the subject industry. The Employment Multiplier represents the total change in number of jobs that occurs in all industries for each additional $1 million of out output delivered to final demand by the subject industry.

Fiscal Impacts

While both counties in the affected area would experience fiscal benefits resulting from the construction and operation of the ON Line Project, most of the sales tax revenue would accrue to White Pine County while the largest portion of property tax revenue would accrue to Lincoln County. Fiscal benefits during the construction phase include sales/use taxes and property taxes (**Table 4.17-3**). There would also be an increase in fuel tax revenue (White Pine County 2009b).

Information provided by NV Energy indicates that the project would generate a total of $10,919,222 in sales tax in the affected area over a 21 to 24-month period. Lincoln and White Pine counties would receive a total of $385,809 in property taxes through 2021.

TABLE 4.17-3 FISCAL IMPACTS OF THE PROPOSED ACTION IN WHITE PINE AND LINCOLN COUNTIES

YEAR	LINCOLN COUNTY	WHITE PINE COUNTY	TOTAL TAXES
Sales and Use Tax	$4,741,000	$6,178,000	$10,919,000
Property Tax	$243,000	$143,000	$386,000
Totals	**$4,984,000**	**$6,321,000**	**$11,305,000**

Source: Calculated by the Preparer using information provided by NV Energy 2009.

Construction

Economic Setting

The affected area is primarily rural with population concentrated in Ely in White Pine County. The combined estimated 2006 population of the affected area is 13,888; 9,150 people live in White Pine County. The economy of eastern Nevada has traditionally been focused on mining, with agriculture dampening some of the boom-bust cycle commonly associated with natural resource extraction. In the context of the area's economic history of boom and bust cycles (see **Section 3.17.3.1**) the ON Line Project would do little to improve economic stability in the area.

The east-central Nevada area is rural with limited local sources for the specialized equipment and materials required for construction. Engineers with NV Energy estimate that approximately 13 percent of the non-wage construction funds would be expended locally. The material to be purchased locally includes gravel and ready-mix concrete, gasoline, diesel fuel, lumber, paint and similar items. Engineers designing the transmission line provided estimates of the amount of material purchased locally and the construction hours necessary to build the transmission line. Since most of the workers constructing the transmission line would not be hired locally, they would be maintaining permanent residences elsewhere. Therefore, it was assumed 50 percent of the wages would be spent locally. Applying the RIMS II multipliers to the estimated spending results in the employment and wages presented in **Table 4.17-2**.

The construction of the Robinson Summit Substation could affect property values in White Pine County. The value of the substation and transmission line may increase the total assessed value of property in White Pine and Lincoln counties, which translates to increased property tax collections.

Much of the land near the Proposed Action project area is administered by the BLM in remote areas of Lincoln and White Pine counties. The transmission line may affect the market price of nearby lands, should the BLM sell them to private parties or other government entities (e.g., state, county, or local governments). Until such time as the BLM disposes of these properties, the transmission line would not affect local receipts in lieu of taxes on BLM properties. The federal government makes annual payments in-lieu of property taxes, but the amount is determined annually by congressional action and has little relationship to the actual value of the land.

Population and Demographics

An average of 224 workers would move through White Pine and Lincoln counties over a 21 to 24 month construction period. Most of these workers would be transient, maintaining permanent residences elsewhere and traveling without families. These workers would leave the area when construction is complete; therefore, it is expected that there would be no residual or long-term population impacts. Because of this transitory nature, few construction workers would be living locally with families and they would place little if any burden on the local school system.

Employment and Income

Constructing the ON Line Project would have a minor and temporary impact on the area through additional employment and wages. In addition to the direct employment and wages associated with actual construction, there would be additional indirect employment and wages that result from spending by the construction companies in the area and induced employment and wages that result from workers spending their money in the area.

Since the two counties examined for social and economic impacts are rural, many of the construction workers would reside only temporarily in the area for the duration of the construction project. As many as 75 percent of the construction workers may have to be recruited from outside of the area (based on information from NV Energy). These workers would leave when construction was completed and without the additional spending of construction workers and purchases of goods needed for the project, the indirect and induced jobs would eventually be eliminated.

Land Ownership

Under the Proposed Action, NV Energy would obtain access to BLM managed land via a ROW grant. The effect of this change on property tax receipts is discussed under "local government and finance" below.

Agriculture

Construction of the ON Line Project would remove a small portion of land permanently from agricultural production (approximately 108 acres for the substation). The Robinson Summit Substation would be fenced making it unavailable for agricultural use which is primarily grazing. The BLM currently administers 4.5 million acres in White Pine County.

The construction of the transmission line would temporarily take land out of service during construction activity along the line. Once the line was in service, the majority of this land would be available for grazing. Impacts to livestock grazing are discussed in **Section 4.9**.

Nearly 95 percent of the value of agricultural production in White Pine County is livestock. Livestock is grazed on both public and private lands in White Pine County and only a small percentage of lands used for agriculture in the county would be impacted by the project. Therefore, there would be a negligible impact on farm income in the county due to the substation and transmission line.

Housing

The majority of the workforce constructing the ON Line Project would stay in various communities in Lincoln, White Pine, and Clark counties. Under the Proposed Action, crews working on the Robinson Summit Substation would likely reside in White Pine County while the crews working on the transmission line from Robinson Summit south to the Harry Allen Substation would live in White Pine, Lincoln, or Clark counties. Those working on the Falcon Substation expansion would likely stay in Eureka or Elko counties.

The place of residence for the workers would change as the line progresses to minimize travel time. This change in place of workers' residences would create short-term demand for housing along the route of the transmission line. Because of this transitory nature, few of them would be traveling with families and they would place little if any burden on the local school system.

During past construction projects, some construction workers have lived in private recreational vehicles parked on public land. Both White Pine County and the BLM have stated that they would like to prevent workers living on public lands in recreational vehicles.

There is currently a shortage of workforce housing in White Pine County. There may be moderate impacts on the current housing stock in the county depending on how many workers chose to reside in Ely, McGill, or Ruth. Occupancy of hotel rooms by the construction workforce may also impact tourism and social services in the county. County tourism groups have developed a clientele for special events held in the county. If there are no available motel rooms to house the persons attending these events, they may cease and not continue, even after the

construction phase of the ON Line Project were complete. Social services in White Pine County use motel vouchers to house homeless persons and victims of domestic violence.

Some workers, especially those working on the southern portion of the transmission line, might choose to live in Clark County and commute. In this case, there would be no impact on housing in the affected area.

<u>Community Services</u>

Impacts to community services are described in this section and subtopics for which impacts are assessed include education, law enforcement, fire and emergency response, health and social services, water supply, and solid waste.

School enrollments in the White Pine County School District have been gradually falling in recent years. There appears to be spare capacity in the school district at the moment, but requirements in the education industry are constantly changing. Most of the workers would be relocating without families and would not require services from local educational facilities. Any impact on school districts in the area would be negligible and temporary.

The construction of the ON Line Project could increase demand for law enforcement and traffic control during the 21 to 24-month construction period. The White Pine County Sheriff's Office is responsible for law enforcement throughout the county and provides law enforcement in Ely. The manpower available to patrol the county is limited. The Sheriff's Office currently provides two deputies at a time to patrol the county. The Sheriff's Office has an ongoing effort to hire more deputies, but competition from Las Vegas, which pays about 20 percent higher salaries, make attracting law enforcement personnel to White Pine County difficult.

Based on past experience, the County Sheriff has stated that the crime rate in the county would increase during the construction phase of the ON Line Project. The number of arrests in White Pine County definitely increased during previous construction projects in the county. The number of arrests then drops sharply when the construction workforce leaves the county upon completion of the project.

Past experience with increased arrests during large construction projects coupled with the consistently full holding cell at the county jail suggests that the construction phase of the project may temporarily impact law enforcement facilities in White Pine County. The increased number of arrests may also occupy the Deputy Sheriffs' time to the detriment of other county residents.

White Pine County believes that a zero tolerance policy with regards to drug and alcohol abuse among the construction workforce has the potential to greatly diminish the impacts on law enforcement.

Because the impacts of construction on population would be negligible, the current size of law enforcement agencies in the area is adequate to manage traffic and law enforcement during construction.

White Pine County is served by volunteer fire departments. The City of Ely has a staffed fire department supplemented by volunteers. The County recently established a County operated fire district. The volunteer firefighters are at their place of employment during the day, complicating responses to fires and other emergencies. However, the proposed project is far from residential areas, and, given the type of this project it is unlikely that construction would tax fire departments in the area.

The William Bee Ririe Hospital in Ely has a fairly low occupancy rate. Routine medical care associated with the construction workforce should not pose a problem.

The small number of construction workers anticipated to reside in White Pine County communities suggests a minor, temporary impact to locally-established health care services.

Social services in White Pine County are generally operating at capacity. The county also has difficulties recruiting and retaining mental health care professionals. These difficulties occur even when budgets are available to pay the personnel. Other factors such as the isolation of White Pine County complicate recruiting social service and mental health professionals. There are no homeless or domestic violence shelters located in the county. Currently, a voucher system is used to provide motel rooms for persons needing shelter due either to homelessness or domestic issues. The Social Services Department in White Pine County could face pressure to place persons needing shelter if there are no vacant motel rooms due to the construction workforce living in them.

The City of Ely has sufficient water rights to serve a larger population. The distribution infrastructure may need improvement to support residential development in some areas. Most of the water is supplied by Murray Springs, but it is vulnerable to highway accidents. About 500 new connections are available for the wastewater treatment plant. McGill and Ruth have water and wastewater systems operated by a separate water district. McGill has sufficient water supply and wastewater capacity. Ruth has a shortage of both water and sewer capacity. Both McGill and Ruth have recently replaced their sewer lines. Water for construction and construction workers would not impact existing community water systems.

The landfill has a limited amount of capacity for construction waste. NV Energy has previously contacted the City of Ely Municipal Utilities Department and received correspondence stating that the amount of waste projected during construction should not pose a problem (Crispin and Isaacson 2008). Based on this, construction of the ON Line Project would have negligible short-term impacts to solid waste management at the landfill.

Local Government & Finance

There would be a beneficial impact on local government finances during plant construction. Nevada state sales and use taxes would be due on all construction and consumable materials used for the project.

Property tax revenue would increase on all real and personal property in White Pine and Lincoln counties connected with the substation and transmission line. Total property taxes would be $385,809 through 2021, based on information developed by NV Energy. State sales and use tax paid on construction materials would total $10,919,222 over the 21 to 24-month construction period (**Table 4.17-3**).

Electric Power Industry

The construction phase would have negligible impact on the Nevada electric power industry's ability to supply power.

Operations, Maintenance, and Abandonment

Economic Setting

Once the project is complete, workers would leave the area and there would be little if any long-term growth in the local area's economy due to the ON Line Project. When complete the facilities would be self-sufficient; thereby reducing the project related workforce. There would be no continuing population-related impacts in White Pine or Lincoln counties after construction of the ON Line Project is complete. Therefore, once construction was over, operation and maintenance of the ON Line Project would have a negligible long-term impact to community

services. Operation, maintenance and abandonment of the substation and transmission line would have a negligible adverse impact on agriculture.

NV Energy would develop a COM Plan in coordination with BLM for the ON Line Project. Once complete, the COM Plan would be used by NV Energy, its agents, contractors, and BLM to clarify construction, operation, and maintenance activities for the project.

Increased property taxes would continue during the operational phase of the ON Line Project. Lincoln County would receive the largest portion of estimated tax revenues. Based on estimates from NV Energy, Lincoln County would receive $242,723 in property taxes through 2021. White Pine would receive a total of $143,086 over the same period.

Local residents who own land near the new facilities may assign a decreased personal value to their property that cannot be measured in economic value, or place different values on different attributes than does the marketplace. They may value their specific piece of property due to family history, rural atmosphere, or lifestyle.

At the end of the useful life of the proposed project, operation of the facilities would be terminated. All facilities would be removed from the ROW. Every effort would be made to reclaim the land to its original contour and drainage along the ROW as required in coordination with BLM.

The impact of abandonment on law enforcement is dependent on the future use of the land. If the facilities were dismantled, then a temporary workforce visiting the area to dismantle the facilities may result in a temporary increased demand for law enforcement. The issues posed by this temporary workforce would be similar in nature but smaller scale to those posed by the construction workforce.

4.17.2.1 Mitigation

Additional mitigation measures are not required.

4.17.2.2 Unavoidable Adverse Impacts on Socioeconomics

There would be no residual adverse impacts to social and economic resources as a result of constructing and operating the ON Line Project. During the construction phase, there would be a temporary influx of construction workers. The impacts caused by this increase in the population of White Pine and Lincoln counties would subside once construction is complete and most of the construction workers leave White Pine County.

The ON Line Project would be self-sufficient; that is, there would be no additional workforce needed for operation or maintenance.

4.17.2.3 Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, the social and economic structure of White Pine and Lincoln counties would not be significantly altered.

4.17.2.4 Relationship of Short-term Uses and Long-term Productivity

Under the Proposed Action, the short-term uses of workforce and resources (during construction) provide for long-term fiscal benefits. The short-term uses do not interfere with the long-term economic and social stability of the area.

4.17.3 Action Alternative

Impacts would be essentially the same as under the Proposed Action and negligible in the context of the total cost of the project.

If the RSS-Site B sub-alternative was selected, impacts would be the same as under the Proposed Action Robinson Summit Substation since this would only be located about 4 miles further south.

If the Segment 10 sub-alternative component was selected as part of the Action Alternative, there would be additional demand for housing and services in Lincoln County by the crews building the transmission line compared to the Proposed Action. An additional 10 miles of transmission line would be constructed in Lincoln County, therefore there would be a small net increase in employment and wages as compared to the Proposed Action (see **Tables 4.17-2** and **4.17-3**).

Operations, Maintenance, Abandonment

Impacts would be the same as under the Proposed Action.

4.17.3.1 Mitigation

Mitigation for the Action Alternative would be the same as for the Proposed Action.

4.17.3.2 Unavoidable Adverse Impacts on Socioeconomics

Unavoidable adverse impacts from the Action Alternative would be the same as for the Proposed Action.

4.17.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources would be the same as for the Proposed Action.

4.17.3.4 Relationship of Short-term Uses and Long-term Productivity

Relationship of short- and long-term uses would be the same as for the Proposed Action.

4.17.4 4.17.4 No Action Alternative

Under the No Action Alternative, there would be no direct impact on the social and economic resources in Lincoln County or White Pine County relative to current conditions. The economies of Lincoln and White Pine counties would continue to be dependent primarily on mining, ranching, and tourism and subject to the economic cycles of the mining industry.

4.18 Environmental Justice

4.18.1 Indicators and Methods

Areas of minority and/or low-income populations within the counties containing the project area were reviewed for their potential to be burdened disproportionately by adverse impacts. Significant minority populations of Native Americans occur in Nye and White Pine counties and a significant population living at or below the poverty level occurs in Lincoln County.

4.18.2 Proposed Action

Construction

The increased traffic, noise, and activity associated with construction of the Proposed Action would be focused at the construction sites and along the access routes. Although minority populations are present in the project area counties, no minority populations were identified in the areas most likely to be directly impacted by the project. Low-income households comprise approximately 25 percent of households in Lincoln County, with similar percentages in Eureka,

White Pine, and Nye counties. In Clark County, low income households comprise about 12 percent of households. In general, the construction of the transmission line facilities would have beneficial economic effects for residents of the four rural counties. No minority populations were identified in the project area, and low-income households are present throughout the three counties but are not concentrated specifically in the project area. There are no special issues, such as housing, transportation access, or resource use in the project area that would affect an environmental justice population disproportionately. Income and revenue benefits from the project would be distributed widely, including potential environmental justice populations.

CEQ and EPA guidelines (CEQ 1997, EPA 1998) recommend several specific tests to determine whether minority or low income populations would be disproportionately impacted by adverse project effect. The potential minority population of Native Americans, identified in **Section 3.18**, would not be disproportionally impacted for the following reasons:

- Geographically, no concentrated minority population would be directly impacted (no project facilities on or through the reservation)
- Economically, overall impacts would be positive, not adverse
- Tribes have had, and continue to have, opportunity to participate in project discussions, through the public participation process and in solicited requests (see **Sections 3.11** and **4.11**)

No population of poor is concentrated in any geographically identifiable area, and, as for minority populations, they would not experience any disproportionate adverse effects from the project, during construction or operations. Overall, there would be negligible disproportionate impacts on minority or low-income households from construction of the Proposed Action.

Operations, Maintenance, and Abandonment

Impacts would be the same as described for construction; minority populations were identified in the general project area but would not suffer any disproportionate adverse effects. There would be no disproportionate impacts to minority or low income populations from operation, maintenance, and abandonment of the transmission line facilities.

4.18.2.1 Mitigation

Additional mitigation measures are not required for the Proposed Action.

4.18.2.2 Unavoidable Adverse Impacts on Environmental Justice

There would be no unavoidable disproportionate impacts on minority or low-income populations.

4.18.2.3 Irreversible and Irretrievable Commitments of Resources

There would be no irreversible and irretrievable commitments of resources.

4.18.2.4 Relationship of Short-term Uses and Long-term Productivity

Short-term uses would not impact long-term economic or social stability of minority or low income populations in the area.

4.18.3 Action Alternative

Impacts for construction, operation, and eventual abandonment of the Action Alternative would be the same to those described for the Proposed Action.

4.18.3.1 Mitigation

Additional mitigation measures are not required for the Action Alternative.

4.18.3.2 Unavoidable Adverse Impacts on Environmental Justice

There would be no unavoidable adverse impacts with regards to environmental justice concerns.

4.18.3.3 Irreversible and Irretrievable Commitments of Resources

There would be no irreversible and irretrievable commitments of resources.

4.18.3.4 Relationship of Short-term Uses and Long-term Productivity

This would be the same as under the Proposed Action.

4.18.4 No Action Alternative

There would be no impacts to environmental justice under the No Action Alternative.

4.19 Hazardous Materials and Solid Waste

4.19.1 Indicators and Methods

The following indicators were considered when analyzing potential impacts to resources from hazardous materials and solid waste:

- Tons or pounds per year of hazardous wastes, and by-products
- Amount and type of hazardous materials transported and stored at the project facilities
- Location and type of solid or hazardous waste disposal sites/systems, and
- Existing risk assessments of effects of hazardous compounds

4.19.2 Proposed Action

Construction

Solid waste streams generated during construction of the Proposed Action, including substations, would include municipal solid waste (MSW), sewage, construction debris, non-hazardous regulated wastes, and small quantities of hazardous wastes. MSW from the workforce would be collected, contained and trucked to an off-site permitted Class I landfill or equivalent. Sewage would be collected in portable sanitary facilities and removed by a contractor for off-site treatment and disposal in an existing permitted treatment facility.

Non-hazardous construction debris would be generated during construction consisting of concrete, wood, scrap metal, and waste packaging materials. These materials would be recycled or disposed of off-site in a permitted landfill.

Hydrocarbon or hazardous wastes may be generated from maintenance of heavy equipment in the field. These wastes would include used oil and grease, antifreeze, solvents, rags, and wipers. These wastes would be properly contained, labeled, and recycled or disposed of off-site in existing permitted facilities.

Wastes produced during construction would be managed in compliance with state and federal regulations and recycled or disposed of in existing, permitted facilities. These management practices would therefore produce negligible environmental impacts.

Operations, Maintenance, and Abandonment

Operation of the transmission line facilities and substations would utilize little in the way of hazardous materials and would generate only minor amounts of MSW, which would be brought back to the service center for disposal. Transformer oils would be used in closed transformers and certain other electrical devices. These are highly refined petroleum oils with low vapor pressure, high flash point, and low toxicity. In normal use, they are fully contained within the electrical apparatus which themselves would be located in secure, fenced facilities. These management practices would therefore produce negligible environmental impacts.

Sodium hexafluoride (SF_6) would be used as a gaseous dielectric medium in system circuit breakers. It is a stable chemical and poses no fire safety problems (Nailen 2009). SF_6 is not a toxic gas and the small releases during equipment maintenance and servicing do not pose public or wildlife health risks. See **Sections 4.6.1** and **4.6.4** for additional information regarding SF_6.

4.19.2.1 Mitigation

Additional mitigation measures are not required.

4.19.2.2 Unavoidable Adverse Impacts due to Hazardous Materials and Solid Wastes

Wastes produced by the Proposed Action would be managed according to all applicable regulations in permitted waste management facilities to minimize environmental impacts. These wastes would contribute to the environmental impacts allowed by the waste management facility permits.

4.19.2.3 Irreversible and Irretrievable Commitments of Resources

Wastes produced during construction and operation of the facilities would be disposed of off-site in existing permitted facilities and would permanently consume some of the waste storage capacity at those facilities.

4.19.2.4 Relationship of Short-term Uses and Long-term Productivity

The use of hazardous materials and generation of solid and hazardous wastes in the construction of the Proposed Action (short-term) would consume some capacity, but not significantly impact the productivity of off-site waste management facilities in the long-term.

4.19.3 Action Alternative

The types of wastes managed and the applicable management practices applied during construction, operation, maintenance, and abandonment of the Action Alternative would be practiced in essentially the same manner as the Proposed Action. The environmental impacts of these practices for the Action Alternative would therefore be the same as the Proposed Action.

4.19.3.1 Mitigation

Additional mitigation measures are not required.

4.19.3.2 Unavoidable Adverse Impacts due to Hazardous Materials

Unavoidable adverse impacts due to hazardous materials would be the same as described for the Proposed Action.

4.19.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources would be the same as described for the Proposed Action.

4.19.3.4 Relationship of Short-term Uses and Long-term Productivity

Relationship of short-term uses and long-term productivity would be the same as described for the Proposed Action.

4.19.4 No Action Alternative

The No Action Alternative would result in the ON Line Project not being constructed or operated so hazardous materials would not be utilized in the project and solid or hazardous wastes would not be generated.

4.20 Transportation

4.20.1 Indicators and Methods

The analysis of impacts to transportation is based on existing access in the area, project requirements, and a project-specific transportation study (HDR et al. 2007). The following indicators were considered when analyzing potential impacts to transportation.

- Current capacity and condition of road system
- Traffic volume
- Projected number of project-related heavy vehicles utilizing roadway
- Changes in existing primary access on public roads through the area
- Project elements and heights that would occur in standard arrival/departure flight paths

4.20.2 Proposed Action

Construction

Access to the transmission line facilities would be from different areas as construction proceeds. Existing paved and dirt roads would be used to the extent possible with upgrading/improvements of dirt roads (grading and gravel) and construction of short segments of new access road as required to allow passage of construction traffic. Construction of the transmission line facilities would proceed rapidly across the project area so access roads servicing any one part of the ROWs would be used for construction for a few weeks or months before the construction moves far enough down the line that other access roads would be used. The center line access road along the transmission line, outside of desert tortoise habitat, would be temporary and reclaimed while the center line access road along the transmission line within desert tortoise habitat would be permanent, to facilitate access for operation and maintenance when necessary. Transmission line installation is not expected to impact traffic flow along major roadways but would impact traffic on secondary roads used for access to the ROWs. There would be temporary and minor to moderate impacts on transportation during transmission line facilities construction.

The presence of improved or temporary access roads may increase OHV activity in the area. Indirect impacts as a result of OHV activity would be negligible, as temporary access roads, outside of desert tortoise habitat, would be reclaimed after construction.

Operations, Maintenance, and Abandonment

Planned operations and maintenance on the transmission line facilities would consist of an annual line patrol of two linemen by helicopter. It would probably take two days per year to

patrol the proposed transmission line facilities. Any ground inspections would be conducted generally following existing access roads within or adjacent to the ROW. This path would also be utilized for required maintenance or repair. Labor required would be 40 to 80 worker days every year.

Access to the Robinson Summit Substation would be from US-50 over an existing dirt road that would be widened and improved and then a new short segment of gravel road that would extend to the substation site. Access to the Harry Allen Substation would be from the existing paved access road off of I-15. Access to the Falcon Substation would be from the existing paved access road off of I-80. Planned operations and maintenance on substations would consist of annual inspections of all major equipment such as transformers, reactors, and breakers (operation verification, visual inspections, infrared inspections, etc.). More intensive inspections and tests would be conducted on major equipment every three to five years (oil samples, switch alignment, gas maintenance, and manufacturer scheduled maintenance). Based on the proposed project scope, workforce requirements could total 200 to 400 worker days per year.

The operation, maintenance, and abandonment of the transmission facilities would have a negligible impact on transportation.

The transmission structures would range in height from 100 to 185 feet, lower than the aviation obstruction guidelines. The microwave tower that would be constructed at the Robinson Summit Substation would be 100 feet high. The transmission facilities would not impact air transportation.

4.20.2.1 Mitigation

NV Energy will coordinate with NDOT and utilize proper signage and traffic controls to avoid potential impacts to roadway conditions due to construction of the Proposed Action.

4.20.2.2 Unavoidable Adverse Impacts on Transportation

There would be no unavoidable adverse impacts on transportation. Improvements made to existing public access routes during project activities would remain after the life of the project.

4.20.2.3 Irreversible and Irretrievable Commitments of Resources

Any changes made during project construction, operation, or maintenance to existing public roads would constitute irretrievable commitments for these roadways. There would be no irreversible impacts to transportation from the project.

4.20.2.4 Relationship of Short-term Uses and Long-term Productivity

The local short-term use of the project area would result in employment and other economic benefits to the local and regional economies. Local public access routes in the project area affected by the project would be restored to conditions equal to or better than existed before the project.

4.20.3 Action Alternative

Construction

Under the Action Alternative, construction impacts would be essentially the same as those described for the Proposed Action. If the RSS-Site B sub-alternative were selected, the access road to that area leaves US-50 about 2.5 miles further west of the Proposed Action Robinson Summit Substation; therefore construction traffic impacts would still be essentially the same as those described under the Proposed Action.

Operations, Maintenance, and Abandonment

Under the Action Alternative, operation, maintenance, and abandonment impacts would be essentially the same as those described for the Proposed Action.

4.20.3.1 Mitigation

Traffic mitigation measures would be the same as those described for the Proposed Action.

4.20.3.2 Unavoidable Adverse Impacts on Transportation

There would be no unavoidable adverse impacts on transportation. Improvements made to existing public access routes during project activities would remain after the life of the project.

4.20.3.3 Irreversible and Irretrievable Commitments of Resources

Irreversible and irretrievable commitments of resources would be the same as for the Proposed Action.

4.20.3.4 Relationship of Short-term Uses and Long-term Productivity

The local short-term use of the project area would result in employment and other economic benefits to the local and regional economies. Local public access routes in the Project Area affected by the project would be restored to condition equal to or better than existed before the project.

4.20.4 No Action Alternative

Under the No Action Alternative, the ON Line Project and associated facilities would not be constructed. There would be no impacts from the project to existing traffic or the transportation system.